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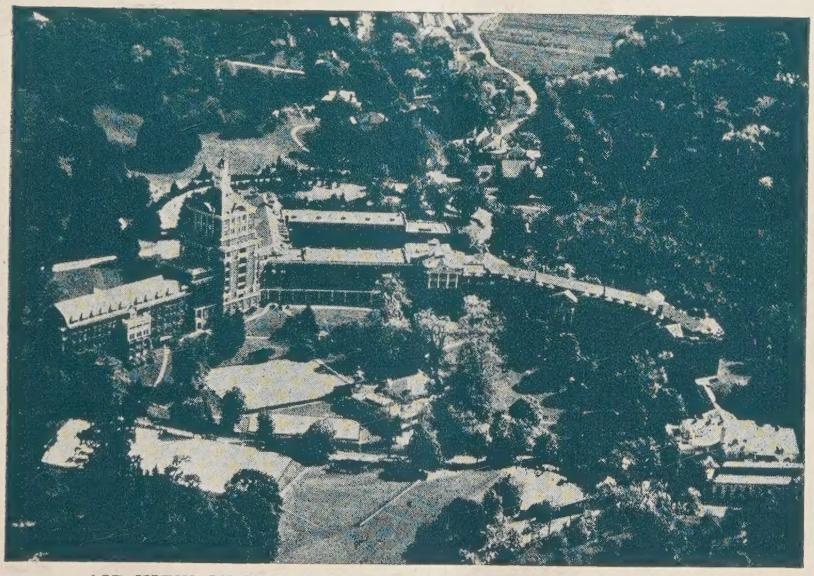

AIR VIEW OF THE HOMESTEAD, HOT SPRINGS, VIRGINIA

Symposium on Endocrinology, page 345

June 1943

Vol. 156, No. 6

"A tooth in a silver leaf"...

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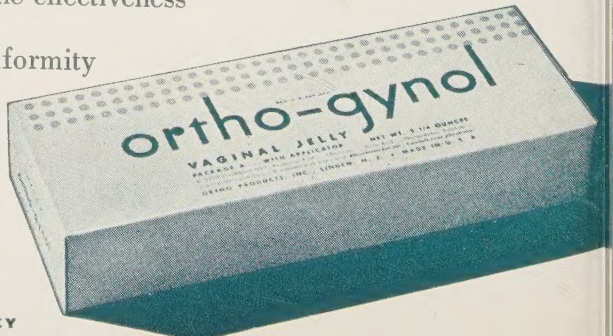

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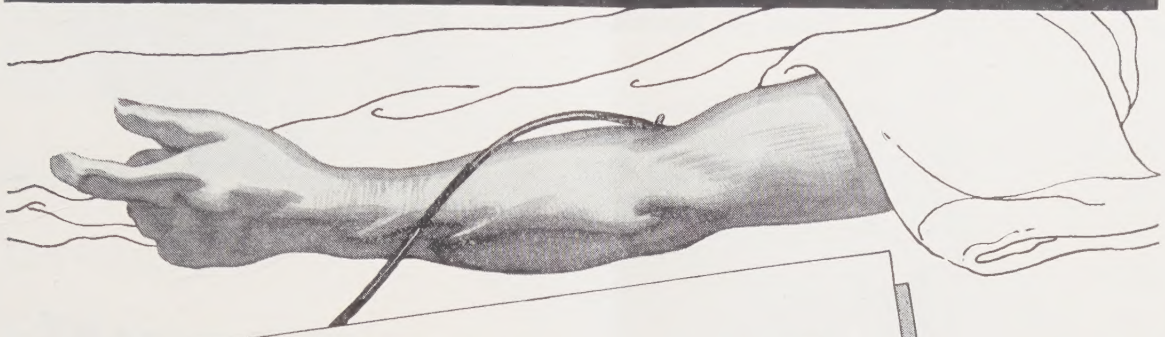

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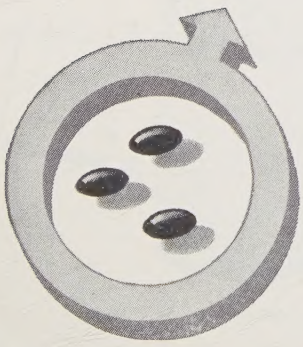

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†Fowler and Barer: "Rate of Hemoglobin Regeneration in Blood Donors." J.A.M.A., 118:421:1942.

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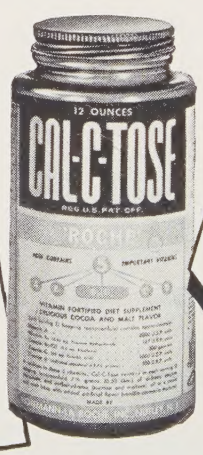

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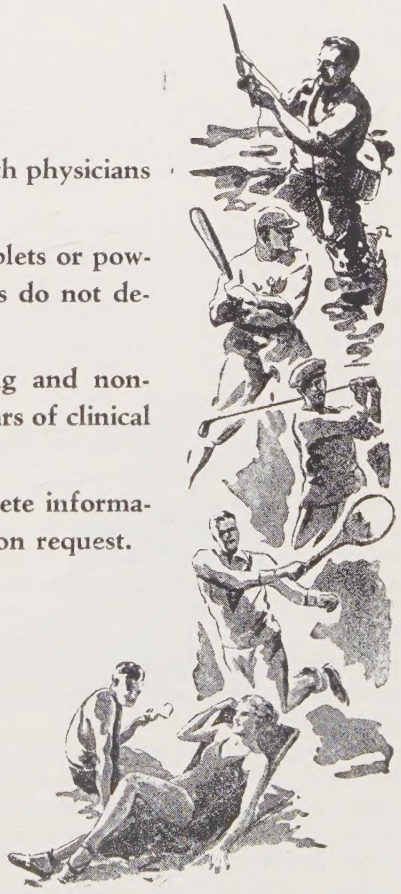

Open Forum

Old Beliefs on the Nature of Contagion

Formerly every disease was attributed to "a peccant humor". Now almost all diseases are ascribed to the hurtful activities of a germ or a gland. As Sir James Mackenzie pointed out in *The Future of Medicine,* pages 11, 35 and 163, the methods employed for the detection of disease have become so numerous and so recondite, that an individual can be adept with only a few, that is, those concerned with the specialty he professes. The Egyptians and the Greeks in their heyday, were conversant with much that seems to have been forgotten but which has sprung up as new, and its main features resuscitated.

In regard to disease, the Jews had sound beliefs as to its possible spread by contact, but their views as to causation were connected with supernatural things. In the Greek and Roman periods much of the idea of contagious transmission of disease was lost and in the treatises of Hippocrates the reference to contagion as understood today are vague. And the curious point is as Marx has indicated, it was not the medical men but the historians, philosophers and poets who came to understand or to comprehend to some extent that the propagation of pestilence was due to touching the diseased and by fomites. Thucydides, who was born in 471 B.C., it is believed, was one of the first to make any definite allusion to the contagious nature of some plagues, although the "plague of Thucydides" has been identified variously by modern authorities as meningitis, measles, yellow fever, scarlet fever, typhus fever and smallpox.

According to Francis Adams, an authority on Greek medicine, there can be no doubt that the pestilence which prevailed during the Peloponnesian war partook of the nature of glandular plague, yet Thucydides in his graphic description makes no distinct mention of buboes.

Marcus Terentius Varro (116-27 B.C.) wrote a treatise, which contained a shrewd guess that certain diseases were due to invisible living creatures. Aurelius Cornelius Celsus, who lived in the reign of Tiberius Cæsar was the first of the great encyclopedists. The book on medicine alone has survived of the series from his pen. He was not a medical man but was a great master of Latin prose and wrote clearly on the various forms of malaria. Martial (43-104 A.D.) wrote of malaria, and the first of these lay writers, Aristophanes (450-380 B.C.), poet and dramatist, in his *Wasps* refers without doubt to malaria. Dionysius of Halicarnassus refers to the disease spread by personal contact. Appian and Livy wrote of epidemics of contagion while Lucretius and Virgil referred to epidemics and epizootics. However, the causes of epidemic diseases were a great mystery in ancient times. They were looked upon as punishments from a divine source for the wickedness of mankind.

The supernatural theory of disease lasted for many centuries, as it must be borne in mind that the great mass of the people were grossly ignorant and the educated generally made use of their knowledge to impose upon the ignorant for gain, while those who were outspoken as well as learned and cultured were not heeded, as they were regarded as cranks. This theory was displaced by the doctrine that pestilence was due to natural causes, especially cosmotelluric. Bad air was the main etiological agent in the Hippocratic pathology. When Rome and civilization declined, the acquisition of knowledge largely ceased.

It may be pointed out that in the Middle Ages, once again it was a lay writer who emphasized the belief in contact or contagion. Boccaccio (1313-1375) gives a vivid and lucid account of the plague in Italy, of the swellings in the groin and armpits, and moreover refers to the plague as a contagion. Among those who early spread the knowledge of contagion in plague were Jacopo da Fordi who died 1413, and Alessandro Benedetti (1460-1525) professor at Padua. He held that disease may be contracted by touch, but that the morbific principle is imbibed and retained in articles used by the sick. Consequently, he inculcated the necessity for purifying the clothes. Fracastorius (1478-1553) wrote on contagion and, as Dr. William Bulloch says in *The History of Bacteriology,* Fracastorius's work on contagion must be regarded as a great, if for a time isolated landmark in the doctrine of infective diseases.

Those men of genius in ancient times who wrote on contagion, were cautious in expressing their views for several and diverse reasons. Many had somewhat dim ideas of contagion as it is regarded nowadays, but kept their own counsel because they were aware that they might be kicking against the pricks. The bolder ones were regarded as visionaries and were unheeded. Even now one who brings out a revolutionary idea is looked upon with mistrust until it has been proved to be practical. Then, he is often exploited by persons with more cunning, who get the money and sometimes the fame in addition. A genius, as a rule, is devoid of what the world calls common sense and is an easy prey for those who have it.

The Low Nail in Treatment of the Trochanteric Fracture of the Neck of the Femur

Fractures of all kinds are frequent, not only in the countries in which warfare is going on, but in countries, as Britain for instance, where large numbers of soldiers are in training. Military training itself leads to many accidents and in the heavy road traffic, often by night, accidents frequently occur which involve not only soldiers but civilians as well. The number of fractures, of which there are a great variety, has increased, and the best treatment available for these is important.

The *British Medical Journal,* April 11, 1942, contains an article by H. A. Brittain, senior orthopedic surgeon of the Norfolk and Norwich Hospital, on the value of the low nail in the treatment of trochanteric fracture of the neck of the femur. He surveys the treatment of such fractures by well known British surgeons by means of nails, none of whom used the low nail. He points out that in the treatment of the above mentioned fracture two factors are most important: 1, the viability of the patient; patients are frequently old and therefore liable to complications and the usual methods are not always satisfactory: 2, the maintenance of position during the period of union.

It is impossible to deal with Brittain's comments on

(*Continued on page* 328)

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these factors at length, but the following point he makes is apt. He says, in part, that even with the most careful nursing and the application of splint or plaster cast, adduction or external rotation of the distal fragment will take place in the majority of patients. It may be said that full movement is unnecessary for these old patients. No one would quarrel with this attitude were it not for the fact that perfect position, rapid union and painless convalescence may be obtained in a very high percentage of cases by successfully nailing with a Smith-Petersen nail. Therefore, the writer argues, that if such a method of nailing is satisfactory, as he holds that it is, why is low nailing not in vogue?

He describes an operation following this method. This is the technique: The fracture is reduced by the Whitman maneuver, and the feet are attached to the footpieces of an orthopedic table by plaster of Paris. This step is essential to ensure stability for radiography. To depend on the human factor in holding the limb is giving a hostage to fortune and one should not rely on fortune in a surgical operation. A Michel clip is placed over the head of the femur and another over the lowest limb of the fracture. These are verified by radiography, and a point two inches below the lower clip is chosen. A calibrated guide (the Hey Groves measure may be used instead of the calibrated guide, if preferred) is passed anterior to the shaft and neck of the femur over this point. It will therefore enter the skin an inch distal to this. It is passed in the direction of the femoral head, and its angle to the horizontal is noted, the latter being a constant. A four inch incision is made and the lateral surface of the femur exposed. With a one-third inch gouge, a longitudinal furrow is made in the long axis of the femur, starting at the trochanteric end. This is done to prevent splintering, and, as the gouge is directed away from the fracture, splintering up into it cannot occur. The furrow should be one and a half inches long and just wide enough to admit the flanges of the nail, but not the head. A Watson-Jones guide is now inserted into the bone and its position checked by anteroposterior and lateral radiographs. The gaping of the incision may have distorted the lateral position of the calibrated guide, hence the importance of noting the angle to the horizontal. If the radiographs show a satisfactory position the nail is inserted in the usual way, a twelve to fifteen centimeter one being used. In regard to after treatment, the patient does active quadriceps exercises and knee movements from the second day. The sutures are removed on the tenth day and the patient is allowed up on crutches after three or four weeks. If the position of the nail is satisfactory, weight-bearing may be permitted after six weeks. The weight-bearing caliper, which protects the entire limb below the fracture and throws a torsion strain on the fracture, is vetoed.

Mr. Brittain, in the two years before July 1941, has treated between forty and fifty patients in the manner described above with good results in over seventy-five percent, but he admits that this is an inadequate statistical statement. However, it seems to be an encouraging result for the low nail method of treating trochanteric fractures of the neck of the femur.

It is interesting to note that Sir Arbuthnot Lane was a pioneer in the use of nails for the fixation of fractures.

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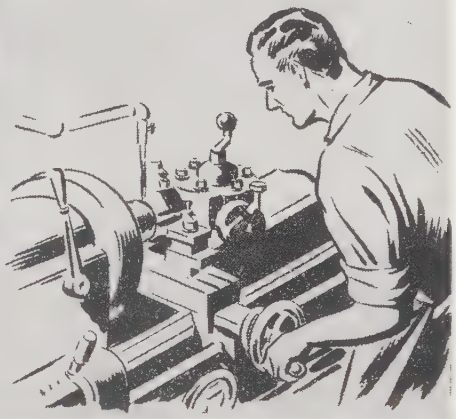

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Civilian Physicians to Be Called for Emergency Service in War Hospitals

Units of civilian physicians organized for civilian defense will be called upon to assist the Army temporarily if it is unable to handle a sudden influx of war casualties or some other military emergency in regular War Department hospitals, according to an announcement by James M. Landis, Director of Civilian Defense. The physicians to be used are those in "affiliated hospital units" which have ben organized by the Office of Civilian Defense and the U. S. Public Health Service in coastal areas and, at the request of the War Department, will now be expanded to include more than two hundred hospitals throughout the country.

The civilian defense function of these units is to provide emergency staffs for temporary hospitals set up in relatively safe interior areas of coastal states, in case patients in coastal hospitals directly in target areas must be moved in the event of an air raid or other coastal wartime disaster. Should there be a sudden influx of battle front casualties, or some other extraordinary military necessity, requiring hospitals and physicians beyond the immediate capacity of the Army in any particular locality, the arrangement will serve the double purpose of relieving the Army of the necessity for organizing its own special groups of physicians for local emergencies and of helping to conserve the dwindling supply of physicians for the civilian population.

Office of Civilian Defense affiliated hospital units will be used for military emergency purposes only in or near the communities in which the staff resides. Their duty will be temporary and they will be replaced by regular Army officers as quickly as the Surgeon General of the Army can make the necessary arrangements. Each of the units consists of fifteen doctors normally associated with a single hospital. The doctors include: a chief and assistant chief of medical services, two general internists, a chief and assistant chief of surgical services, four general and two orthopedic surgeons, a dental surgeon, a pathologist, and a radiologist.

Physicians accepted for service with the affiliated hospital units receive reserve commissions in the U. S. Public Health Service, but will be called to active duty by the Surgeon General only at the call of the Office of Civilian Defense. When a unit is needed, either to staff an Office of Civilian Defense emergency base hospital or to assist the Army temporarily in a military emergency, the physicians of the unit will be placed on active duty for the duration of that particular emergency, and receive the pay and allowances of medical officers of equivalent rank in the Army. They will return to inactive status as soon as they can be replaced by Army medical officers.

In order that the formation of Office of Civilian Defense units will not conflict with the regular military procurement of physicians, applications for commissions are accepted only from the following groups: physicians forty-five years of age or over, women physicians, physicians of any age who are physically disqualified for military duty, and physicians already declared essential for civilian needs.

Initially, only hospitals and medical schools in the areas considered in most immediate danger of enemy attack were invited to form these units, but such units will now be formed throughout the country.

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Seventy-five scholarships in medical and psychiatric social work will be made available to eligible candidates between July 1, 1943, and July 30, 1944, by the American Red Cross, it has been announced. These are a continuation of the program initiated last December, under which approximately sixty scholarships have been granted.

Upon successful completion of the scholarship training, students will be assigned to positions on Red Cross staffs in military hospitals where the need for well-qualified personnel has rapidly expanded because of the war.

Candidates may designate the school of their choice from a list of social work schools offering an approved course in medical and psychiatric social work. Educational requirements include successful completion of one year of graduate work in an accredited school of social work, and it will be necessary for each applicant to apply directly to the school of his choice to obtain approval for admission. Awards of full tuition and $65 a month for maintenance will be made according to the individual qualifications of the applicant in order of receipt of the applications by the assistant director of Red Cross Military and Naval Welfare Service, Hospital Service, in the four following Red Cross area headquarters: North Atlantic Area, 300 Fourth Avenue, New York, N. Y.; Eastern Area, 615 North St. Asaph Street, Alexandria, Va.; Midwestern Area, 1709 Washington Avenue, St. Louis, Mo.; Pacific Area, Civic Auditorium, San Francisco, Calif.

Application forms may be obtained from any of these addresses or the Personnel Training Unit, Services to the Armed Forces, American Red Cross, Washington, D. C.

Research in Virus Diseases at Ann Arbor, Mich.

The National Foundation for Infantile Paralysis and the University of Michigan have joined in a long-range program for the training of doctors, public health workers and laboratory technicians to study infantile paralysis and other virus diseases, according to a joint statement by Basil O'Connor, president of the Foundation, and Dr. Alexander G. Ruthven, president of the University. It was expected that the program would be expanded to its full scope about June 1st when the University opened its new three-story building for its School of Public Health at Ann Arbor, Mich. The new structure will house a unit devoted entirely to work in virus diseases, particularly infantile paralysis. The virologists who will be trained under the program will be prepared to attack the whole realm of virus diseases, including not only infantile paralysis but also influenza, atypical pneumonias, St. Louis and equine encephalitis, measles, chickenpox, smallpox and mumps.

To aid in the necessary planning and execution of such a project, the National Foundation has made a three-year grant, totaling $120,000, to the University, in addition to three previous grants, totaling $110,000, made in the past three years. This makes a total of $230,000 which the Foundation has made available to the University of Michigan School of Public Health since May 13, 1940, when the first steps in this pro-

(Continued on page 334)

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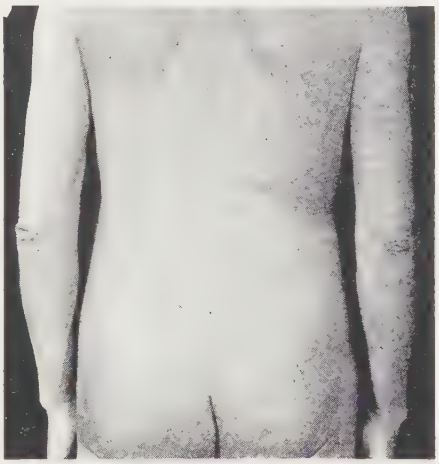

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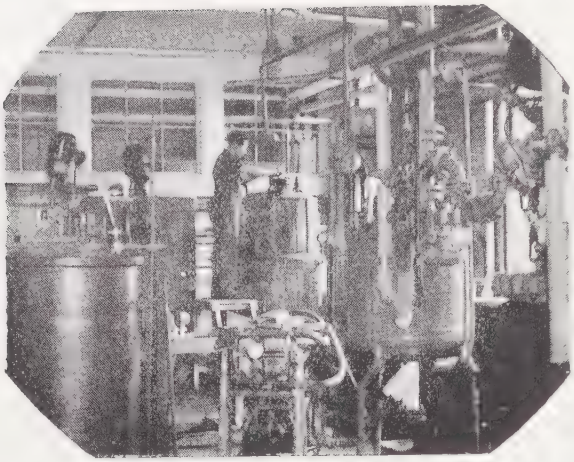

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gram were planned by Mr. O'Connor and Dr. Henry F. Vaughan, dean of the School of Public Health. Dr. Ruthven points out that, even though the school has not had adequate facilities during the two years since it opened, it has made several outstanding contributions to our knowledge of how poliomyelitis is transmitted and on epidemic diseases in the Army and in vital war industries. In addition, twenty men and women have received training in virology during that time. "This new three-year grant," he says, "will insure the uninterrupted conduct of this program for better national health."

Disaster Operations Plan

Every plant medical department should prepare a "disaster operations plan" to provide adequate medical service in case of a plant catastrophe involving large numbers of casualties. This is the advice presented in a new bulletin, "Emergency Medical Service for Industrial Plants," issued by the Medical Division of the Office of Civilian Defense.

The War and Navy Departments have urged that plants for which they are responsible plan to use the facilities and services of the Emergency Medical Service organized by Civilian Defense authorities. The Medical Division has in turn urged that local chiefs of Emergency Medical Service assist plant medical departments by placing the community medical facilities at their disposal in the event of a major emergency, regardless of its cause.

Pointing out that plant medical departments are not ordinarily staffed or equipped to provide medical service for the large number of casualties which may occur in a major disaster, the bulletin outlines arrangements which should be made to assure adequate medical care at such times.

It is advised that the disaster operations plan should provide for necessary first aid care at the site of the incident, for adequate ambulance service, and for hospitalization of the seriously injured. Provision must first be made for Casualty Stations. Several sites should be selected, in order that alternative locations may be used in case those of first choice are destroyed or rendered unserviceable. An additional site outside the plant should be selected for use in the event of extensive damage to the plant.

The importance of identification and records is especially emphasized. It is pointed out that in any disaster confusion will be inevitable, it will be difficult, without adequate records, to identify the seriously injured and the dead and to determine the number and names of the missing. The uninjured as well as the injured should be accounted for.

In a consideration of transportation, the bulletin recommends that arrangements be made with the local Chief of Emergency Medical Service to insure that ambulances under his direction will be made available to the plant should a disaster involve the entire community. Similarly, any ambulance facilities owned by the plant should be made available to the local Chief if they are not required at the plant.

Present plans for the hospitalization of industrial accident victims are likely to be grossly inadequate in the event of a major plant catastrophe. Large numbers of patients should not be sent to one hospital, if other hospitals are available. To provide quick and efficient service to injured persons, casualties should be distributed among various hospitals.

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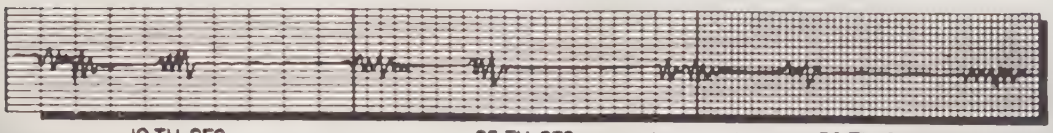

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Significance of Systolic Cardiac Murmurs in College Students

Andred W. Contratto, Boston (*New England Jour. of Med.*, April 22, 1943) says that the systolic murmur is the physical sign which causes most difficulty in evaluating the cardiac status of a young person. The exact mechanism involved in the production of such murmurs is not understood. It may be assumed, he says, that many of them are due to stenosis of various heart valves or congenital defects may be responsible, and in many cases the murmur may be due to hypertension, arteriosclerosis, dilatation or atheroma of the aorta, without valvular lesions. Through the cooperation of the Department of Hygiene at Harvard University, the author had an opportunity to make a study of the cardiac status of youths in their late teens. There were 2856 students in the group and their cardiac status was evaluated as accurately as possible by a careful history and physical examination, and when indicated, fluoroscopy, electrocardiograms and follow-up studies were done.

Three hundred and fifty (12.3 percent) of the total group were found to have a systolic murmur. In 208 (seven percent) the murmur was classified as functional at the time of the original examination and the cases were not studied further. In only nine cases was it possible to make a diagnosis of inactive rheumatic heart disease with valvular lesions. In six cases a diagnosis of congenital heart disease was made. One hundred and twenty-seven students (four percent) had systolic murmurs of such intensity or character that the original examiner was unwilling to diagnose them as functional. A good many of these subjects were carefully studied and followed for two to four years, and in no case was it possible to make a diagnosis of organic heart disease, although, of course, it may have been present. A fairly large number of boys were studied who had previously been restricted in their activities because of heart disease that did not exist.

The author concludes that the incidence of previous rheumatic fever and inactive rheumatic heart disease among Harvard College students is very low. Apparently, the diagnosis of organic heart disease is made too frequently when it does not exist. Likewise, the restrictions placed on persons with minor valve deformities is probably too rigid, and may inhibit an otherwise normal program, both physical and mental.

Typhus Control in Palestine

The quarterly report of Hadassah, the Women's Zionist Organization of America, Inc., states that the U. S. Army Typhus Commission, which was sent to the North African sector last December to lead the fight against typhus in the armed forces, under the directorship of Rear Admiral Charles S. Stephenson, M.C., U. S. Navy, were given access to all research and clinical findings on the disease by staffs of the Rothschild-Hadassah Hospital and the Hebrew University in Jerusalem. The report presented a survey of the cooperation of the Hadassah Hospital authorities with Allied medical authorities in the Holy Land. It was stated that Rear Admiral Stephenson became ill while in Damascus with his mission, and had been flown by bomber to the Hadassah Hospital for treatment, where he was under the care of Dr. M. Rachmilewitz, head of the Hadassah

(*Continued on page 338*)

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Department of Internal Medicine and Cardiovascular Diseases. Lieutenant Commander W. B. McAllister, Medical Corps-V(S), U.S.N.R., also a member of the commission, was detailed as special aide to Rear Admiral Stephenson during his convalescence. While at the Hospital, members of the Commission attended courses in military medicine in the tropics, consulted with specialists on the typhus problem, and surveyed research findings in other fields, especially that of wound healing. Full use of the Hospital's cancer research laboratory, film library and pathological museum was also extended to them.

American medical men from all branches of the armed forces, as well as English, Hindu, French and other Allied doctors are participating regularly in a series of courses in military medicine. Among them are eye specialists who are studying a method of treating trachoma which has reduced the incidence of this virulent eye infection to a minimum in Palestine. Dr. Haim Yassky, director of the Hadassah Medical Organization in the Holy Land, reported a drop in the disease in the last three decades from forty to four percent among Palestine's school children. He has made all pertinent data available to Americans interested in the possible application of trachoma control in the United States.

Our Contributors

Israel Bram, M.D., Philadelphia, Pa., has devoted nearly thirty years exclusively to clinical research on goiter and endocrinology. He is the author of four books on goiter and the thyroid and has contributed over one hundred and fifty articles to medical journals on disorders of the ductless glands. Dr. Bram has taught at the Medico-Chirurgical College, and more recently at the Jefferson Medical College. His hobbies are Shakespeare, philosophy and the musical classics.

* * *

Abraham O. Wilensky, M.D., New York, N. Y., was graduated from the College of Physicians and Surgeons, Columbia University, New York, in 1907. He is a member of the American Medical Association, a Fellow of the American College of Surgeons, a member of the American Association of Thoracic Surgery, and a consultant in several hospitals in general and abdominal surgery.

* * *

Max Gerson, M.D., New York, N. Y., was born and educated in Germany. He attended the universities of Breslau, Wuerzburg, Berlin and Freiburg, and after graduating in 1906, spent a year in Berlin under the tutelage of Professor Albert Fraenkel in the capacity of assistant physician. He spent the following four and a half years at the hospital in Friedrichshain with Professor B. Kroenig and Professor Boruttau, was also a short time at the children's clinic with Professor Finkelstein, and at the University of Breslau clinic with Professor Minkowski. He practiced as a specialist in internal and nervous diseases for a time and then became associated with Professor Sauerbruch in his clinic in Munich, later doing special work in the treatment of tuberculous disease by means of diet. In 1933 he went to Vienna, and two years later went to Paris where he remained until he came to America in 1936. During the years 1929 to 1933 he lectured in many European countries. He has made many valuable contributions to medical literature.

Thomas J. Parks, M.D., F.A.C.P., New York, N. Y., was graduated from the Tulane University of Louisiana School of Medicine, New Orleans, in 1927, following which he served a one year rotating internship and a one year residency in general surgery at the Employees Hospital, Fairfield, Ala. In addition, he served a one year internship, a one year residency in pathology, a one year residency in obstetrics, and a one year residency in gynecology at the Sloane Hospital for Women, New York. In 1934 he received the degree of doctor of medical science in obstetrics and gynecology, Columbia University. At present he is engaged in private practice limited to obstetrics and gynecology. He is assistant attending gynecologist at Vanderbilt Clinic, clinical assistant obstetricion and gynecologist at Woman's Hospital, and assistant in obstetrics and gynecology, Columbia University.

* * *

Benjamin Dubovsky, M.D., New York, N. Y., received his medical degree from New York University College of Medicine in 1917. He was formerly physician and director of laboratories at People's Hospital and physician in charge of the diabetic clinic at Beth Israel Hospital, New York. For many years he was instructor at New York University College of Medicine. His hobbies include writing, lecturing and laboratory research, especially in diabetes mellitus and geriatrics.

* * *

Gershon Ginsburg, M.D., Philadelphia, Pa., was graduated in medicine from the University of Pennsylvania in 1917, and served with the A.E.F. during the World War in France and Germany. He is at present affiliated with the Northern Liberties Hospital in the capacity of pathologist and associate in medicine. His favorite pastime is chess and his hobby is histopathology.

* * *

Noah E. Aronstam, M.D., Detroit, Mich., has done intensive postgraduate work at the University of Berlin in the dermatological department. Formerly he was professor of dermatology at Michigan College of Medicine, but is now actively engaged in research work on fungous diseases of the skin and experiments on the pineal gland. He is the author of *The Lost Nation,* and his hobbies are philosophy and poetry.

* * *

Frederick Damrau, M.D., New York, N. Y., is a graduate of Long Island College Hospital where he received the Corydon L. Ford prize for the best dissection and later (in 1916) taught anatomy. During the World War he served as an officer in the Medical Corps from 1917 to 1921. He was formerly assistant attending physician on the neurological service at King's County Hospital and the out-patient clinic of Long Island College Hospital. He is now engaged in medical research on foods and drugs. His hobbies are tennis and contract.

* * *

Milton A. Lesser, B.S., New York, N. Y., is a graduate of the College of the City of New York. He has been associated with several industrial and research laboratories and has done research on cellular resistance in the department of experimental surgery, New York University School of Medicine, and on vitamins in the department of chemistry, Fordham University. His hobby is collecting material on the history of medicine and pharmacology. He is a member of the American Chemical Society and other societies.

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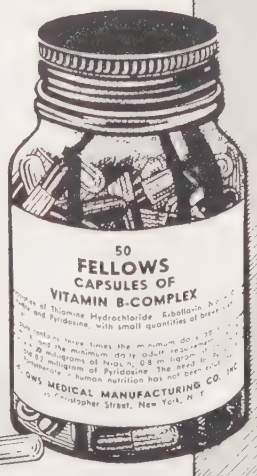

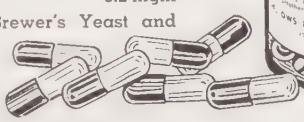

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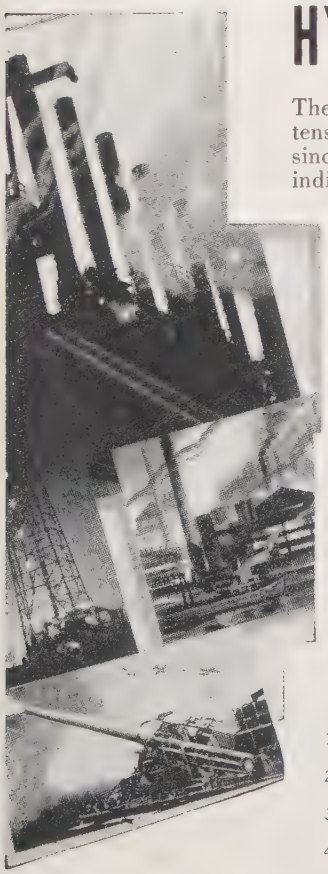

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1. ROBINSON, S. C., and BRUCER, M. Arch. Int. Med., 66:393, 1940.
2. ALLEN, E. V. Occupational Disease Symposium, Northwestern Univ. Med. Sch., p. 70, 1938.
3. U. S. Census, 1938, Quoted from Public Health Reports, 56:2081, Oct. 24, 1941.
4. ADSON, A. W. *Hypertension.* Univ. of Pa. Press, Philadelphia, 1941, p. 21.
5. MULHOLLAND, S. W. J. Urol., 42:957, 1939.

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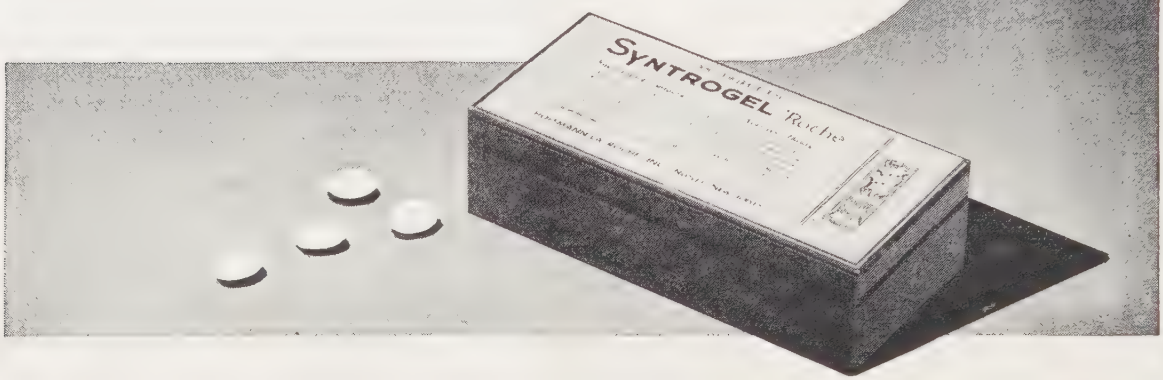

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MEDICAL RECORD

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SOME ASPECTS OF THE PROBLEM OF FATIGUE

MAX B. GERSON

New York, N. Y.

Ludwig Aschoff pointed out in his lectures on pathology that it is impossible to distinguish histologically between infections and regenerative and reparative inflammation. This means that the organism has few ways, or probably one essential way to act or react in its struggle for life and health. This is true not only for the above mentioned reactions but also for the causes which produce some of them.

In this short article an effort has been made to show that processes such as fatigue, trauma, poisoning, old age and inflammation are all due to the same type of changes in the mineral metabolism. The different clinical and pathological pictures vary according to the degree of change and the damage caused.

We may begin by saying that abnormal biological processes start with changes in the mineral metabolism, and the return to normal begins with the reestablishment of a normal mineral metabolism. This points to a uniformity in nature, as the same law can be applied to plants, animals and human beings.

The problem of fatigue will first be dealt with from this viewpoint.

Fatigue is generally explained as a disturbance of metabolism and particularly as an excess of acids, especially of lactic acid after exercise, while various authors bring one or another component into the foreground. In short, though the symptoms seem to be essentially different, they arise from the same source.

Fatigue and weakness are often the first symptoms of diverse chronic diseases, such as mental disturbances, myasthenia, tuberculosis, old age, cancer, etc. I have described in several articles that the underlying cause of some of these diseases is, in the beginning, an increase in the cells of water, sodium chloride, and other minerals belonging to the sodium or Na group and a decrease in potassium, calcium, phosphorus, and other minerals belonging to the potassium or K group.

Margeria (1) defines fatigue as follows: It is a sense of general discomfort and a lessened readiness of the muscular system to perform work. He finds that in fatigue the period of contraction of muscle fibre is prolonged and that, as a result, the frequency of contraction is slowed down. He holds the general view that this is caused by the creation of the acid products of metabolism which at first stimulate more rapid contraction, but later impede contraction by accumulation. In periods of rest these waste products are removed by means of oxidation and the former ability to work is restored. Although he emphasizes that the essential physiological process of glycogen division in the muscle fiber takes place anaerobically, he still thinks that the function of the O_2 supply is decisive in fatigue. Several other authors, including Helmuth Boehme (2), Isac and Matthes (3), and Isac, Matthes and Yamanaka (4), share this view and even go a step further.

The last named investigators find that the damage is done, not so much by a deterioration of the above described composition of the arterial blood, as by a poor O_2 supply at the periphery, resulting from the slowdown in circulation; that is, the O_2 supply is less, the farther the tissue is removed from the center.

According to Margeria, in prolonged anaerobic activity the pH content of blood is reduced by some "O.4 to O.5 units". This signifies a high degree of acidosis, which would lead to coma if it were not checked by all available protective mechanisms for the neutralization of acids. He thinks that the appearance of nervous disturbances is due to the insufficient functioning of this protective mechanism, which also explains the temporary improvement following the use of sodium bicarbonate.

The decrease of pH in the blood is of course due to increased lactic acid and carbon dioxide, because breathing cannot remove the latter promptly enough. The accumulation of carbon dioxide produces still more unfavorable consequences in that it liberates additional quantities of lactic acid from sodium combinations, thus overburdening the liver.

Christensen's observations regarding the metabolism of muscular functions show two important results: 1. In great physical exertion the blood sugar sinks. If the sugar level of blood rises as a result of an additional sugar supply, the ability to perform work is considerably improved. 2. Three persons who were trained for these experiments were able to work up to three times as much with a predominant carbohydrate diet as with a fatty diet. Accordingly, he defines fatigue as a "hypoglycogen symptom of cerebral origin".

The facts cited up to this point explain the symptoms of fatigue somewhat as follows:

Fatigue sets in, and must set in, because the organs of metabolism, circulation and elimination are, in their daily, normal functions, incapable of functioning longer than for a limited period of time without rest. The more intense the activity, the more limited the period of uninterrupted functioning.

The Body's Reactions to Avoid Fatigue

For the purpose of increasing the rate of activity it is possible for the organism to accelerate certain individual functions, and to add others. The supply of O_2 is increased by means of blood rich in erythrocytes from the reservoirs, and this increase in hemoglobin facilitates the absorption of O_2 in the lungs. Simultaneously, more and more capillaries are being unfolded, thus bringing more O_2 to the active organs in the periphery. Maegeria, Atzler (6) and others, therefore, see in a deficient O_2 supply the main factor of the fatigue symptoms. In this manner Christensen's result of increased efficiency with a carbohydrate diet becomes understandable, because the carbohydrates need much less O_2 for combustion than fats and proteins.

In another article Christensen (8) states that the respiratory quotient during work shows only slowly increasing combustion of fats. Even if the blood sugar temporarily falls to fifty-two milligrams percent, forty percent of the energy is still furnished by carbohydrates.

F. Bruman made interesting observations on O_2 consumption. He introduced the assumption of an "O_2 debt" in the tissues which appears in connection with a certain exertion of the body. He describes how this "O_2 debt" is influenced by the addition of potassium chloride. The O_2 consumption is reduced to one half despite sufficient ventilation. The production of carbon dioxide is reduced. The elimination of ammonia falls. Potassium is partly retained . . . Accordingly the yield of the muscle rises to the highest possible level.

Fatigue and Mineral Metabolism (Experiments with the K Group)

During these experiments, the subject feels very uncomfortable; he can work only painfully, and is quickly exhausted. The advantages of such maximum performance of the muscle are therefore questionable; they are very limited in duration, and are accompanied by injurious nervous symptoms.

However, the fact that potassium supply seems to be a factor in the fatigue problem was evidenced by various other experiments. Thus, Winkler (10) found that there is an increase of potassium in the muscle of the pregnant uterus in preparation for the great task ahead. The dry weight of the potassium content is increased from 1.030 percent in the second month of pregnancy to 2.58 percent in the ninth. The potassium-sodium quotient is increased from 1,601 to 4,961. On the other hand, according to Gerard (11a), all tissues, whether muscle, gland or nerves, with maximum function have the greatest potassium-sodium quotient. This accumulation of potassium seems to be a precaution of the body to prepare these tissues for the inevitable increase in the amounts of acids which result from the increased activity during maximum function and these acids must be alkalized.

Eppingers' (22) animal experiments have contributed fundamental evidence of this fact. He measured a loss of potassium in muscle (from 439 mg. percent to 414), in the heart (from 411 to 394) and especially in the liver (from 428 to 350) resulting from increased activity.

As a consequence of my studies (7a) I introduced a potassium rich diet as treatment for cardiorenal diseases in order to eliminate sodium chloride and water from the edematous tissues. (The enrichment of the minerals of the potassium group and the diminishing of those of the sodium group provides the chief physiological basis for the absorption of the products of inflammations of an acute or a chronic nature, as they are found, especially in tuberculosis.)

The *changes of the mineral contents in fatigue* are shown in the following table[1]:

Normal

	Number of animals	MG. PERCENT K	Na	Ca	Cl	K:Na
Muscles	29	439	109	11	40	2.39
Heart	29	411	125	11	..	1.94
Liver	29	428	99	8	69	2.55

After Eighteen Hours Running

	Number of animals	MG. PERCENT K	Na	Ca	Cl	K:Na
Muscles	31	414	117	12	35	2.09
Heart	31	394	142	10	..	1.64
Liver	31	350	117	9	60	1.76

As regards the production of ammonia, the animal experiments of Heinz Wagner (12) have demonstrated that following radiation with x rays and during heavy protein feeding ammonia is required for alkalizing. If four to five days before radiation, the alkali content of the blood serum is increased fourfold by means of an abundant diet of turnips, then the average loss resulting from radiation is sixteen percent for calcium and nineteen percent for potassium. In other words, with such an abundant supply of mineral salts from vegetables, the body uses these first to neutralize the acids, and only after their supply has been exhausted is ammonia produced for this purpose.

The significance of potassium for the function of the muscle fiber was the subject of researches by Murray (13). By means of a potassium-free solution he made the hearts of chicken embryos poor in potassium. When these hearts were then immersed in a potassium-containing solution, there was a distinct fibrillation, more pronounced even than that of the normal heart.

W. R. Hess (14) also found that normal contractions are restored to heart muscle fibers poor in potassium after adsorption of potassium. He also found that the parasympathetic nervous system has a "histiotropic function", by which he means the removal of waste material from the tissues as well as their replacement. This function is stimulated and accelerated by the addition of potassium. This confirms the views held by Kraus and Zondek.

Tatyaeva (15) irritated the sympathetic nerve fibers of an isolated frog muscle which was immersed in Ringer's solution. He found that only the fatigued muscle yielded potassium and lactic acid to the surrounding liquid; there was no such outflow of potassium and lactic acid from the resting muscle. Wallace O. Fenn (16) found that among others the fatigued muscle showed evidence of a phosphorus loss.

The loss of potassium by the actively functioning muscle—and especially by the heart muscle—has further been established under many various experimental conditions. Dennis and Moore (17) found that after artificial locking of the coronary arteries the potassium content of the coronary veins rises; this signifies loss of potassium by the muscles. Marenzi and Fustinoni

[1]From Eppinger: *Arch. f. exper. Path. u. Pharmakol* 133:509-524.

(18a) determined the potassium and sodium distribution in the bodies of toads after removal of the adrenals. As soon as insufficiency symptoms appeared, usually forty-eight to seventy-two hours after the operation, these investigators found that in the blood plasma sodium falls and potassium rises; while in the liver and heart muscle the contrary happens. That is, in the liver and heart potassium is lost and sodium is taken up. This process is less pronounced in the other muscles.

There is, therefore, increasing evidence that fatigue is a problem of metabolism, the basis of which is a loss of potassium, phosphorus and other minerals, and penetration into the cell of sodium and other elements. To avoid these pathological changes as far as possible I worked out the fundamental principle of salt free diets and found that some fruit juices are especially helpful for sodium elimination (18b).

Different Conditions for the Change in Mineral Metabolism

However, it must not be forgotten that before this exchange of minerals can take place, the capillaries must first have been damaged. Kaunitz and Schober (19b) furnished experimental proof of this fact with eight salamanders which had been poisoned with allylformiat. They found that the lowering of the normal potential difference occurred in the vena cava after some five to thirty minutes, but in the liver only after some twenty to sixty minutes. This socalled "salamander experiment" has meanwhile been confirmed by many other investigators, so that the fact has become generally accepted that the damaging of the capillaries must precede any change in the parenchyma cells.

Fenn (20) observed the same phenomenon, and while studying the potassium and chlorine ions of the muscles he found that various conditions influenced these ions in the opposite sense. In hard and prolonged work the fibrilla loses potassium and absorbs instead an equivalent quantity of sodium. This change is reversible during a rest period. This result led to the assumption that, following the accumulation of the acid waste products of metabolism the cell membranes become permeable for both potassium and sodium but traveling in the opposite direction.

The chief result of these studies is that as a biological law, the following process is always repeated: If the cells have been damaged, sodium enters and potassium, together with phosphorus, calcium and magnesium, leaves. This process remains fundamentally always about the same, irrespective of the type of cell damage which preceded it.

The only variable feature in fact is the degree of damage suffered and the momentary condition of the cell. The following may be mentioned as causing such varying degrees of cell damage: fatigue, trauma, operation, poisons, anesthesia, alcohol, toxins (from infectious diseases), tumor, atrophy of the organs, loss of organs, and old age, R. Keller (21).

Fatigue—Rudiments of Inflammation

The following chart compiled by Eppinger has been chosen to show that there is only a difference of degree between fatigue and inflammation. It must be emphasized that of the ten symptoms of inflammation, the three first are also typical for fatigue:

X. Invasion of leucocytes.
IX. Formation of necrosis, equalization of chemical and physical tension.
VIII. Tearing up of capillaries—formation of pudules of blood.
VII. Thickening of epithelium.
VI. Thickening of capillary wall—disturbance in cell nutrition.
IV. Increase in sodium and loss of potassium—cloudy swelling.
III. Potassium and sodium migration.
II. Change in potential difference. } fatigue
I. Change of the physical permeability. }
I. to III. Histologically not identifiable fatigue.
IV. to X. Histologically identifiable *serous inflammation*, etc.

The experiments of Fenn and Gősch (23), showed consistent results. They fed rats with two different one-sided diets until atrophy of the muscles had been produced. The one diet consisted of cereal-milk foods with the addition of cod liver oil; the other consisted solely of grains, thus exaggerating the usual faults of the human diet. The analysis of atrophied muscles showed that the loss of potassium was incomparably greater than that of creatin; and that the increase in sodium was almost double that of chlorine. That is, sodium entered not merely in combination with chlorine, but in addition by itself. These atrophy experiments therefore show in greatly exaggerated form the same process, namely, a loss of potassium by the cell and the penetration of sodium.

There is a close connection between fatigue and sleep during which, according to Waelsch (30), similar changes in the metabolism of the cells occur after changes in their permeability have taken place. This problem, as well as the clinical symptoms of fatigue in various diseases, and the connection between fatigue and fear in psychiatry (Claudes) are not a part of our inquiry.

Up to this point we might summarize the facts cited above somewhat as follows: Fatigue is caused by a condition of slight general acid poisoning which changes the mineral contents of the cells by a loss of potassium, phosphorus and other minerals, and their replacement by sodium, chlorine, and water. This change is reversible during rest. Compared with inflammation, fatigue seems to be a reversible partial symptom of general inflammation.

Old age, on the other hand, seems to be a chronic, nonreversible form of fatigue. The following table, compiled by Peter W. Salit (24) of the Eye Clinic of the University of Iowa, shows clearly the shifts in the mineral contents of the cells from the eyes of oxen in old age.

EXAMINED ANIMALS	AGE	CAMERA FLUID MG. PERCENT POTASSIUM	CORPUS VITREUM MG. PERCENT POTASSIUM	SERUM MG. PERCENT POTASSIUM
5	4 weeks	21.3	29.5	24.5
6	6 weeks	21.3	22.7	27.2
6	8 weeks	19.6	28.3	30.6
5	1 year	20.1	20.5	27.0
7	5-10 years	16.5	23.4	21.6
5	over 10 years	8.5	20.5	15.3

With its chief characteristics of reversibility, fatigue stands, in effect, outside the realm of pathological symptoms; for its general and local changes disappear again during rest, in contradistinction to the more lasting or permanent changes of inflammation, atrophy and other pathological processes.

The mechanism of changes occurring in the cell during fatigue and inflammation is further illuminated by the studies of Jacques Loeb (25) who seems to have been the first to discover a swelling of the living cell following the penetration of sodium. His essential discovery was that the proper distribution of the mineral salts as between the blood and tissues is linked up with certain *"Schwellenwert"*, the socalled "potential difference". He concluded that proper distribution of the mineral salts is the determining factor for the functions of the cells. And he also found that it is possible to influence the capillary membranes. The normal plant and animal cells have certain powers which counteract the forces of osmosis and diffusion so as to prevent an equalization of the potential difference. According to Szent-Györgi (26) vitamin P helps to maintain the potential difference.

The studies of Rudolf Keller (27, 28) and Hans Eppinger and his school have further advanced the understanding of these processes. Eppinger found that a number of vital forces are effective in the normal function of the cell mechanism: 1, hydrostatic pressure; 2, osmosis and diffusion; 3, oncotic pressure (with plasma protein as refulator); 4, viscosity of the plasma (for instance, more highly concentrated venous; 5, interstitial connective tissues (the connective tissues inserted between the cell and the capillaries take an active part in the exchange of fluids); 6, electrostatic forces.

Rudolph Keller shows in his studies that the parenchyma cells are positively charged, while the blood, the lymph and the connective tissues are negatively charged. The electrical tension between blood and parenchyma cells may at first seem insignificantly small—only sixty millivolts as measured in the high tension apparatus of Fűrth. Considering, however, the small distance involved it is very significant.

Keller and his school demonstrated in numerous papers that in plant as well as animal organisms salts, food elements, and vitamins are separated into two groups. In the highly concentrated biological milieu their electrical charge has been transformed; "they show a tendency to adhere to the protoplasma colloids, and to accept their traveling direction". In this manner, however, the normal movements of anions and cations in a diluted inorganic salt solution is reversed; in the latter, the acids travel to the anode, and the alkalis to the cathods. In the biological milieu it was shown by Waelsch by means of high tension apparatus that the negative chlorine and water travel to the negative cathods, while potassium, the most positive metal, goes to the positive anode. This means that within the living tissues, and especially in the living cells and membranes, the mineral salts are subordinated to the functions of these cells and tissues. They still retain their dominating power in the life of the cell as far as the equilibrium and exchange are concerned. They are the carriers of the electrical charge in cells, but have to adapt themselves to the prevalent laws of the colloidal proteins. The latter are themselves no pure electrical type, and have been called "zwitter-ions" or "in-between" ions.

The result of numerous experiments in this field permit us to say that in the living cell the minerals are grouped in such a way as "not to upset the very delicate equilibrium of the cell proteins". Gradually evidence has been accumulated that sodium, chlorine, disassociated calcium, H_2O, iodine and vitamin C are positively charged; and that potassium, PO_4, SO_4, calcium, magnesium, glucose, urea, insulin, some vitamins, etc., are negatively charged. Keller formulated the electrical *"Gruppenregel"* or "group-rule", and showed that the members of the positive group (the socalled Na group) cling to the negatively charged blood, lymph and connective tissues, while the members of the negative group (the socalled K group) are stored in the positively charged parenchyma cells. A description of the technique used in this research work can be found in an article by Edward Singer (33).

Now it becomes easier to understand the various forces which are active on the cell surface and which are also measured by the potential difference. Thus, in poisoning and inflammation the potential difference may fall considerably, even to zero, first in the capillaries and then in the cells themselves. Keller found that "fatigue, poisoning, illnesses, lack of oxygen, lack of food, reduce the normal electrical tensions in the tissues as well as in the blood serum and connective tissues".

Changes in the mineral contents of the cells produce different reactions as far as function is concerned. Sodium causes swelling of the cell and loss of glycogen in the liver cell; potassium has the contrary effect. I have not been able to find any data as to whether or not the glycogen loss of the working muscle increases with the penetration of sodium; it would be an interesting fact in comparison with analogous processes in the liver cells.

All these observations and studies may now give us certain indications regarding the biological processes underlying fatigue. 1, The membrane is damaged by the production of acids which make it more permeable. There follows, 2, lowering of the potential differences; 3, inflow of sodium, chlorine and water and outflow of potassium, calcium, phosphorus, magnesium, etc.; 4, regeneration towards the normal status in rest, or, 5, if rest is no longer able to restore the normal state then these changes become a permanent condition such as is found in atrophy or old age, etc.

The theoretical conclusions of these fatigue studies seem now to point in the following direction: In order to attain greater capacity to work or increasing endurance, the human body requires an accumulation of minerals of the K group, so as to give the tissues a greater reserve for neutralizing the acids which are the inevitable waste products of body activity or metabolism. By means of this "K group reserve" the normal pH is strongly protected and the normal potential difference is maintained as long as possible.

Mineral Metabolism—a Unit in Soil, Plants (Food) and Animals

The studies of Dumont (34) show perhaps best the connection between fatigue and the larger problems of nutrition. He deals with the effects of a deficient mineral composition of the soil and the foodstuffs grown on it upon the working power and culture of the population. He demonstrates that the contents of such minerals as potassium, phosphorus, calcium, magnesium and others in soil and food become determining factors in the development of races and nations.

(*Continued on page 367*)

Symposium on Endocrinology

THE MEDICAL MANAGEMENT OF EXOPHTHALMIC GOITER*

End-Results in Three Thousand Cases

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In the history of medicine the treatment of many diseases passes through fads and enthusiasms, eventually to simmer down to the sobriety of experience. Among procedures finally abandoned as irrational and dangerous were the administration of cinchophen and pyramidon in the treatment of joint and muscle pains and the dinitrophenol treatment of obesity. Another more recent measure widely accepted for the treatment of coronary disease, angina pectoris and congestive heart failure was total removal of the normal thyroid, on the theory that the resultant hypothyroidism would cancel some or all symptoms and prolong life. While the operative mortality rate in the hands of the expert thyroidectomist was low, the postoperative hypothyroidism was of little avail in the long run. And so this procedure, too, has now been practically abandoned.

It is a reproach to the internist that the surgeon should have been compelled to operate so frequently in Graves' syndrome when such cases, properly treated, could respond satisfactorily to conservative measures. Were medical men to study carefully the history of these patients and the personality behind the disease, they would realize that its correction requires, not the cutting out of the thyroid, but sympathetic and painstaking attention to the entire human being. Graves' disease would then cease to be the tragic malady that continues to attack an alarming percentage of persons, and its surgical treatment would become obsolete.

It must be emphasized that treatment of exophthalmic goiter or Graves' disease is not merely treatment of hyperthyroidism. *It is not treatment for a lump on the neck.* During a period of more than thirty years I have seen hundreds of patients who had been operated upon one or more times without the reward of recovery. But now the literature points to the dawn of another phase in the management of this disease. At last we are being cautioned, by many competent observers reporting on the nature of the exophthalmos, that in a large percentage of cases surgery in exophthalmic goiter is contraindicated. The light of rationality now dictates that the management of this complex disease requires the complexity of a broad, modern, psychosomatic approach.

The Exophthalmos

The exasperating question of exophthalmos is what now serves to focus sharp attention on the irrationality of taking thyroidectomy for granted as *the* cure for exophthalmic goiter. Perplexed by the increasing incidence of postoperative progressive exophthalmos, even in those without proptosis preoperatively, many clinicians are giving much time to efforts at analysis of this unfortunate complication. Some of the inferences are highly significant.

Redisch and Perloff (1): "Conservative therapy has its place in the treatment of hyperthyroidism because (a) of a certain number of surgical failures; (b) certain cases are not amenable to surgery; (c) mild cases do not need surgery at all[1]."

Means (2): ". . . sufficient evidence exists to warrant defining it [exophthalmic goiter] as a constitutional disturbance involving a complicated hormonic imbalance, having widespread effects, in which the thyroid is but one item." He further remarks: ". . . the eye condition is not a direct result of hyperthyroidism." And elsewhere: "I submit that although the results of subtotal thyroidectomy in the properly iodinized patient with Graves' disease are often excellent, nevertheless, thyroidectomy in this disease is to be classified as symptomatic, not specific treatment. It assuredly is not the ideal treatment, nor do I believe it will be the ultimate treatment."

Aird (3): "The term 'malignant exophthalmos' designates the progressive and alarming proptosis which occurs in a small group, usually after thyroidectomy and in the presence of a low basal metabolic rate. Unless relieved by operative decompression of the bony orbit, as devised by Naffziger, a high percentage of these patients develop corneal ulceration, infection, and fatal intracranial extension of the orbital cellulitis. The fact that exophthalmos may occur with hyperthyroidism and yet steadily progress to a malignant form in the presence of postoperative hypothyroidism suggests an *indirect* relationship with hormones affecting the thyroid gland, such as the *thyrotropic hormone* of the anterior pituitary body."

Friedgood (4): "Exophthalmos may frequently appear for the first time after subtotal thyroidectomy for exophthalmic goiter; or, having been present before operation, can become worse afterwards . . . The exophthalmos . . . goes through two phases, the reversible and the irreversible . . . Certain circumstances apparently predispose patients with exophthalmic goiter to the development of the irreversible type of orbital pathology. The most important of these is thyroidectomy . . .".[2]

Means, Hertz and Williams (5): "There is abundant evidence, both clinical and experimental, that eye in-

*This report is supplementary to two earlier reports on this subject published in this journal, viz.: Medical Treatment of Exophthalmic Goiter: End-Results in Two Thousand Cases 130: 238, 1929, and Medical Treatment of Exophthalmic Goiter. End-Results in Six Hundred Cases Followed up for a Period of Eight to Twenty Years 138: 423, 1933.

From the Bram Institute Clinic for Goiter and Glandular Diseases.

[1]This would contradict the orthodox thyroidectomist whose exhortation has been "Send them to us early!"

[2]In view of the intimate relationship of the hyperplastic thyroid to the anterior pituitary, it would appear that ablation of the thyroid in Graves' disease stimulates within the pituitary an aberration of its hormones which in some way excites the mechanism of progressive exophthalmos.

volvement is not the direct result of thyrotoxicosis. On the clinical side there are the facts, first, that thyrotoxicosis can exist without eye signs; and second, that eye signs, characteristic in all respects of Graves' disease, can exist with little or no thyrotoxicosis."

Our observations indicate that in the majority of cases of Graves' disease in which the patients were not operated upon, the degree of exophthalmos parallels

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FIG. 1.—A. Photograph of a woman, forty-five years of age, with exophthalmic goiter of four years' duration, approaching crisis. There were frequent attacks of complicating angina pectoris; weight, 122 pounds, heart rate, 150, basal metabolism rate, plus 70 percent.

B. Photograph of the same patient taken after about ten months of medical management during which she was performing most of her household duties. There was complete recovery. The patient was followed up for over fifteen years.

the severity of the general symptomatology. Although marked exophthalmos with mild symptoms of hyperthyroidism is often seen in patients who have been operated upon and those who have not, and contrariwise, frequently little or no exophthalmos is observed in those with rather severe constitutional symptoms, the typical case of Graves' disease, which represents perhaps sixty percent of all cases, presents a symptomatology in which the severity of the eye symptoms and the constitutional manifestations are fairly parallel. The common exception is the thyroidectomized patient or the individual whose thyroid function was ablated by intensive radiation. In these, the eyes may protrude to a dangerous degree, despite mild constitutional symptoms or even clinical hypothyroidism.

The Thyroid Swelling

The goiter of Graves' disease is a nonneoplastic, nonencapsulated swelling. As such the correcting influence of a conservative medical regime usually succeeds in effecting involution of the thyroid to normal. Exophthalmic goiter is no more due to the thyroid swelling than is typhoid fever due to the associated splenic swelling. Imagine the U-shaped mass representing the normal thyroid gland to be a dry sponge. Attach a golf ball to this sponge and you have a diagrammatic picture of a surgical goiter. The removal of the attached ball constitutes the operation—and recovery is complete. Again, imagine another small U-shaped sponge dipped into fluid. It will become swollen to several times its size. Diagrammatically speaking, this swelling may be regarded as nonsurgical. Appropriate general medical attention unloads this "sponge" and it gradually shrinks to normal. Since the swelling is the *result* of conditions originating elsewhere in the body, the orthodox procedure of cutting off the hyperplastic swelling is attacking the wrong end of the clinical picture, thus accounting for the many surgical failures. These comments can be condensed to a simple statement: The hyperplastic swelling uncomplicated by adenoma or cyst is reversible. Iodized calcium (not Lugol's solution), in association with quinine, is the medicinal mainstay during the toxic period[3].

During the process of properly applied medical treatment the swollen thyroid in Graves' disease undergoes three stages:

The *first* stage is that of hyperplasia, well recognized by the accompanying general symptomatology, including the thrill and bruit over the thyroid area. It is the stage of toxicity of hypervascularization.

The *second* stage is that of the socalled "resting" thyroid in which hypervascularization has given way to a tremendous accumulation of colloid within the acini, crowding out the excessive blood supply and thereby eliminating the thrill and bruit. So marked is this change in architecture that the size of the thyroid may become greater than during the hyperplastic stage. Indeed, this increase in size may so alarm the patient that she believes herself becoming worse, despite the practical disappearance of general symptomatology. The metabolic rate drops markedly toward or into the normal or minus rating, the weight increases, and there is a reduction of the heart rate to a quite satisfactory figure. The exophthalmos may be unaltered or only slightly improved and in a certain percentage of instances (marked by a tendency toward excess weight) a little more prominent. At this point the dosage of iodized calcium and quinine is reduced or discontinued. Instead, if there are no contraindications, minute doses of desiccated thyroid are administered, beginning with one-fortieth to one-twentieth of a grain daily, cautiously increasing to a tolerance dose.

Now the *third* stage of thyroid involution is begun, with the gradual disappearance of the excess colloid and a return to normal size of thyroid. In the average case it is soon discovered that the individual can take approximately one-half grain of desiccated thyroid daily and this is about the dose required to effect the total disappearance of thyroid swelling in course of time. Indeed, in some cases the thyroid actually becomes atrophic under this treatment[4].

The Heart

It is universally recognized that the heart bears the brunt of the damage wrought by the severity and duration of exophthalmic goiter, and circulatory failure is the usual cause of death. The heart's behavior usually parallels the severity of the entire syndrome and may

[3] In this contribution we are discussing not toxic adenoma but purely exophthalmic goiter or Graves' disease. These conditions are not synonymous. Toxic adenoma, which is an *oldstanding neoplastic, nodular* thyroid swelling recently become hyperactive, is a surgical entity. The hyperplastic thyroid of Graves' disease is a *recent, diffuse* swelling of *nonneoplastic* nature which undergoes involution as the result of properly applied nonoperative attention.

[4] A note of warning must be sounded against the premature administration of thyroid extract. Occasional mild clinical subthyroidism, lending a semblance of safety, may mask an occult Graves' syndrome, which may become reactivated by even small doses of thyroid. It is well here to repeat the clinical safety points as guides to the clinician: 1, disappearance of thrill and bruit over the thyroid; 2, substantial increase in weight and strength; 3, disappearance of tremor, and 4, reduction of pulse and basal metabolism rate to normal or below.

be regarded as the most dependable criterion of the course of the disease during crisis, remission or recovery as the case may be.

Digitalis and such "heart stimulants" as strophanthus, convallaria and sparteine are generally useless if not contraindicted. One exception may be noted: In the event of auricular fibrillation, digitalis in combination with other medicaments may assist in restoration

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FIG. 2.—A. Photograph of a woman, thirty-one years of age, with exophthalmic goiter of eight years' duration, in severe crisis; weight, 100 pounds, heart rate, 180 per minute with arrythmia, and beginning congestive heart failure; basal metabolism rate, plus 105 percent.

B. Photograph of the same patient taken fifteen months later, the patient having achieved complete recovery by medical means. She has now been well for nineteen years.

of cardiac rhythm. Iodized calcium (not Lugol's solution) and quinine salts, in our experience, yield good results by an amelioration of the general toxicity. Eserine (physostigmine) is useful as a parasympathetic stimulant and incidentally serves in many cases to expedite improvement in the exophthalmos (6).

Recently we found that the oral administration of prostigmin bromide, though quite similar to eserine in physiological effects, is superior to the latter in that it is more stable, produces less myosis and is less depressing to the heart and blood pressure than is eserine. Prostigmin reduces the violence of the heart action, reduces intraocular tension and constricts the palpebral fissure. The effective dose of prostigmin is one-half to one tablet (seven and one-half to fifteen milligrams) two or three times a day. In the presence of diarrhea, sialorrhea or severe sweating, prostigmin is contraindicated. Other contraindications are coronary disease and heart block, rather rare complications of exophthalmic goiter.

In the event of auricular fibrillation prostigmin bromide alone seems more effective than quinidine alone, but the combination of prostigmin seven and one-half milligrams, quinidine sulphate five grains, and extract of digitalis one-quarter grain is quite effective.

The Diet

A patient responding promptly should gain on an average of ten pounds during the first month, after which an average of one and one-half or two pounds a week is quite satisfactory until, within eight to twelve weeks, the weight is restored to normal. Commonly the discharged patient weighs ten or fifteen pounds more than before the inception of the disease.

Unless the patient is obese (an uncommon circumstance in Graves' disease) he must virtually eat his way to health. Tea, coffee, condiments, spices and alcoholic substances must be forbidden. Smoking, too, must be stopped. Flesh foods may be given once a day. Bread and butter, cereals, the dairy products, fruits and vegetables should be taken in maximal amounts.

The quantity of food required by the average patient is based upon: 1, the amount during good health; 2, the amount necessary to combat the results of the hypermetabolism; 3, the amount required to regain lost weight; 4, the additional quantity necessary to effect a five to ten percent increase over and above the patient's normal standard of weight, to be retained as a condition of permanency of recovery for approximately a year following discharge from treatment. Thus, for a while, the average patient requires practically twice the amount of food taken during normal health. As the goal is approached the food intake is tapered down, and when recovery is attained the patient is again on the normal food requirement.

Infectious Foci

In our experience focal infections in Graves' disease are usually coincidental rather than causal. However, irrespective of etiological unimportance, focal infections require correction. When to remove infectious foci is a problem upon which may depend the prognosis and even the life of the patient. Precipitous action is hazardous. In a case of *early* Graves' disease, in a patient who faces the operative procedure with little or no apprehension, a tonsillectomy, for example, may be performed early with minimal reaction. If the syndrome is well advanced, however, it is best to wait for marked improvement, as any added shock, whether it be emotional strain, tonsillectomy, or the extraction of a tooth, may convert a hopeful clinical picture into one of acute anxiety for all concerned.

Drugs

The drugs found useful in the conservative management of Graves' disease are quinine, iodine (in minute doses), prostigmin, the barbiturates, and, in extreme underweight, insulin. The facts to be remembered are the following: In approximately ninety-five percent of cases of Graves' disease there is a relative immunity to cinchonism; iodine is too often abused, and in case of doubt it is best to omit this drug; prostigmin, in the absence of contraindications, is a drug the usefulness of which is too often overlooked; the barbiturates stand foremost as sedatives and for the relief of insomnia, but care must be exercised in the selection of the product and dosage; finally, insulin, cautiously employed, is a potent weapon in combating the carbohydrate intolerance and undernutrition which so commonly determine the course and prognosis of the case in hand[5].

Drugs, as other remedial measures are supportive devices employed until such time as the patient is self-supportive. As recovery is reached and the basal metabolic rate, heart rate and weight reach normal, remedial measures, especially drugs, are gradually withdrawn. Ordinarily we find that treatment may be discontinued within three or four months after the first normal basal metabolic rate and heart rate are observed. Usually

[5]Such complications as gastro-intestinal disturbances, congestive heart failure, and intercurrent conditions as diabetes mellitus, tuberculosis and psychoses require special consideration.

there need be no resumption of medical attention after treatment has thus been discontinued.

Psychotherapy

Exophthalmic goiter is a typical example of the psychosomatic syndrome, and a few words on practical daily psychotherapy are timely. The internist must be willing to devote ample time to his patient and employ

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FIG. 3.—A. Photograph of a man, thirty-one years of age, with severe Graves' disease of eleven years' duration; in crisis and apparently moribund. There was auricular fibrillation with a heart rate of 196 per minute and a pulse deficit of 50 per minute. The patient was water-logged. The basal metabolism rate was above plus 100 percent.

B. Photograph of the same patient, taken about fourteen months later, during the terminal five months of which he had resumed his usual occupation. The basal metabolism rate, heart action and rate were normal, and all other evidences of the disease had disappeared. This result, too, was accomplished by nonoperative management. The patient was followed up for a period of ten years.

the necessary tact and warmth and paternal spirit in his efforts to eradicate discoverable maladjustments. *And the doctor must always leave his patient in a cheerful mood.*

Most patients insist that they must continue working while under treatment. If the heart is enlarged and arrhythmic, everything must subserve circulatory stability and the restoration of reasonable cardiac reserve, and so the patient must submit to a preliminary period of inactivity. In the average case, however, the inability of the patient to undergo a short rest program is not a deterrent to favorable progress. In the interests of proper adjustment of the job to the individual or the individual to the job, the physician must become the family counsellor. In a goodly percentage, however, it is necessary merely to adopt the early-to-bed routine and to carry out the therapeutic suggestions relating to diet, medication, and curtailment of avoidable physical and mental exertion, with scarcely a change in customary wage-earning or housekeeping activities.

The fewer the visitors, the better. Occasionally visitors, whether relatives, just friends, or neighbors, cause the doctor more worry than do patients. Relapse may occur in a patient shocked by a well-meaning neighbor who, to make herself interesting, had thought it best to communicate to the invalid the worst news she could find. Unless visitors make the patient glad of their presence, it is best to give strict orders against their admission to the sickroom.

In psychotherapy the matter of religion may play a vital rôle. Regardless of the faith of the patient, attempts at adjustment of doubts and fears will do much to render therapeusis a lighter task. The assistance of a minister, a priest, a rabbi, or even a wise family counsellor, as the case may be, may add solace to the troubled soul. Our hope is to bring the atheistic, the bigoted, the fanatical, and the confused into the fold of a healthy faith in God, in self, and in mankind. The serenity of mind and imperturbability resulting from the surrender of the emotions to an abiding faith assist in the attainment of enduring recovery.

The patient thus managed becomes calmer than ever before and sees his environment less through the medium of his emotions and more through the calculations of logic. The former maladjusted individual has now acquired the emotional stability which spells resistance to recurrence of Graves' syndrome.

Course Under Treatment

The course of clinical events in the average case of Graves' disease while under appropriate medical attention is as follows: The *tachycardia* is the first noticeable symptom to benefit, the heart rate becoming normal within a few weeks to a few months, depending upon the severity of the syndrome. Paralleling the heart improvement, the *weight* rises toward normal. The behavior of the *thyroid swelling* has already been discussed. The *tremor* usually disappears concurrently with normality of heart and metabolic rate. The *exophthalmos* may be the last symptom to go although there are many exceptions to this rule. In those whose exophthalmos was extreme the eyes may bulge for a few months or a year or longer after normality in all other respects has been reached; but with few exceptions, sooner or later, the appearance of frozen fright becomes

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FIG. 4.—A. Photograph of a woman, thirty-four years of age, with severe exophthalmic goiter of three and a half years' duration. There was auricular fibrillation with impending circulatory decompensation. Her weight was 119 pounds, the heart rate was 150, and the basal metabolism rate, plus 105. Comment: This type of Graves' disease, without exophthalmos but with marked accent on the thyroid, would ordinarily be scheduled for thyroidectomy without hesitation.

B. Photograph of the same woman, who had entirely recovered without surgery. Note the complete involution of the tremendous thyroid hyperplasia. This patient has now been well for five years.

a past event. *We have had no incidence of sequential progressive or malignant exophthalmos.*

The Follow-Up Method

We were able to follow up three thousand cases of Graves' disease for periods varying from five to twenty-five years. Approximately seventy-eight percent of the patients were females. The youngest patient was two

and one-half years old, the oldest seventy-eight; both females. The average age incidence was twenty-eight years[6].

During active treatment our patients were observed at intervals of from twice a week to once in two or three months, depending upon the proximity of residence to our clinic. Approximately eight percent of these patients were institutionalized for an average of five weeks, then discharged for home attention.

When recovery was reached the follow-up period (in person) began. Depending upon the distance of the patient's residence, he or she was requested to appear for examination at intervals of three months to once a year, the average being once in six months. The patient was checked up subjectively and objectively in detail, with the weight, heart action, basal metabolic rate, thyroid, eyes, sense of well-being and endurance as the indices of recovery[7]. A patient who has recovered commonly presents a minus metabolic reading. The eyes and the size of the thyroid should be normal, and the sense of well-being should correspond to that of normal health.

Table I: Follow-Up Period of Three Thousand Cases of Graves' Disease Treated Medically

PERIOD OF FOLLOW-UP	NO. OF PATIENTS
Over five years	2,490 or 83 percent
Over ten years	390 or 13 percent
Over fifteen years	90 or 3 percent
Twenty to twenty-five years	30 or 1 percent
Total	3,000 or 100 percent

Duration of Treatment

The patients in this series were discharged from active treatment within two to eighteen months of observation, the average being approximately 7.4 months. The individual duration depended upon the age of the patient, the duration and severity of the syndrome, the presence or absence of complications, and the degree of cooperation obtainable. Early cases required only several weeks of active treatment. Sufferers from severe Graves' disease commonly presented myocardial fatigue with auricular fibrillation and in some cases circulatory decompensation with anasarca. Not infrequently the basal metabolic rate exceeded plus ninety percent. The duration of the symptoms varied from a few months to twenty years. In about twenty percent of this series surgical treatment had been resorted to months or years before, either with temporary benefit and eventual relapse, or no tangible improvement. A number of cases presented a combination of Graves' disease and myxedema.

It must be emphasized that the average patient in this series remained at work while under treatment, but an early-to-bed daily routine was insisted upon until normality was achieved.

Comments on Residua

Eighty-eight percent of the patients in our series have been enjoying normal health. The four percent presenting some proptosis had progressive exophthalmos at the outset. Most of the patients with residua had been thyroidectomized or had undergone extensive radiation prior to coming under our attention.

[6]This series, over which a proper follow-up control was possible, is part of a gross total of more than 5200 cases of Graves' disease personally observed since January, 1910.

[7]In patients seen prior to 1918, when the metabolic instrument was not available, the indices of recovery were normality of pulse, weight, and other factors aforementioned. Those still under observation in 1918 and subsequently were subjected to metabolic determinations.

Table II: End-Results in Three Thousand Cases of Graves' Disease Treated Medically and Followed Up for 5 to 25 Years

Normal health	2,640 or 88 percent
Mild exophthalmos (otherwise normal)	120 or 4 percent
Heart enlargement (mainly objective)	105 or 3.5 percent
Mild clinical hypothyroidism	45 or 1.5 percent
Mild exophthalmos and heart enlargement	36 or 1.2 percent
Mild exophthalmos, heart enlargement and clinical hypothyroidism	54 or 1.8 percent
Total	3,000 or 100 percent

A degree of cardiac enlargement may remain indefinitely in those who presented a severe type of the disease for years. On discharge from treatment these patients were told of the need of more rest in bed each night and cautioned against excessive physical and mental strain. However, most of them have been largely disregarding these orders on the ground that they are feeling well and see no occasion for restrictions.

Patients with a combination of postoperative hypothyroidism and Graves' residua may be difficult to manage. The symptoms of myxedema (excessive weight, extreme fatigue, dry skin, persistent drowsiness) presented a complex problem since thyroid opotherapy may cause a flare-up of an occult Graves' disease. The occasional patient presenting mild *spontaneous* subthyroidism enjoys good subjective health nevertheless.

Conclusions

1. Because of the resistance of the mechanism of exophthalmos and other symptoms of exophthalmic goiter to thyroidectomy, the literature on the subject appears to be entering the phase of reaction against surgery in the treatment of this disease.

2. It is generally accepted that exophthalmic goiter or Graves' disease does not originate in the thyroid gland. It would appear that it is a general psychosomatic disease in which the personality as well as the symptoms requires serious consideration.

3. Guiding principles in the rational medical treatment are pointed out, with emphasis on diet, medicaments and psychotherapy. The average patient need not discontinue working while under medical attention.

4. In our series of three thousand medically treated cases of the disease seen within a period of over thirty years and capable of being followed up in person for five to twenty-five years, 2640 patients, or eighty-eight percent are normal insofar as the Graves' disease is concerned. The remaining 360 patients, or twelve percent, present mild sequelæ which do not materially interfere with normal social and economic usefulness.

References

1. Redisch, W. and Perloff, W. H.: The medical treatment of hyperthyroidism. *Endocrinology* 26:221, 1940.
2. Means, J. H.: The eye problems in Graves' disease. *Ill. Med. Jour.* 80:135, 1941.
3. Aird, R. B.: Experimental exophthalmos and associated myopathy. *Ann. Int. Med.* 15:564, 1941.
4. Friedgood, H. B.: Clinical applications of studies in experimentally induced exophthalmos of anterior pituitary origin. *J. Clin. Endocrin.* 1:804, 1941.
5. Means, J. H., Hertz, S. and Williams, R. H.: Graves' disease with dissociation of thyrotoxicosis and ophthalmopathy. *Trans. Assn. Amer. Phys.* 56:67, 1941.
6. Bram, I.: Physostigmine salicylate in treatment of exophthalmic goiter. *Arch. Int. Med.* 48:126, 1931.

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THE PROPER SELECTION OF THYROTOXIC PATIENTS FOR SUBTOTAL THYROIDECTOMY

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Many of the failures experienced in the operative treatment of the various forms of thyrotoxicosis (Graves' disease, etc.) are directly attributed to a faulty selection of patients suitable for operation. This is largely due to an inaccurate appraisal of the symptomatology and the provocative pathology of thyrotoxicosis, even in the presence of the classical subjective signs. The difficulty is further enhanced by the presence of certain complications, some of which are not amenable to subtotal thyroidectomy, or markedly increase the dangers of operation.

For clinical purposes, cases of thyrotoxicosis (exophthalmic goiter, Graves' disease, Basedow's disease, primary hyperthyroidism) may be divided into the following groups:

1. Classical cases of exophthalmic goiter showing, in various grades of severity, all the cardinal symptoms of thyrotoxicosis, exophthalmos, rapid pulse, irritability and nervousness, swelling of the thyroid, and loss of weight. All grades of severity can be found.

2. Cases of thyrotoxicosis similar to those in the first group, in which all the cardinal symptoms are present with the exception of exophthalmos. This group contains the bulk of the cases and contributes not a little to the minimal morbidity and mortality which the larger clinics are able to report. Nevertheless, severe cases are found in this group also.

3. Cases of localized adenoma of the thyroid with symptoms of mild hyperthroidism. The patients are not very ill.

In the absence of complications or other associated factors or conditions, the selection of cases in any of these groups is relatively easy regardless of the grade of severity of the thyrotoxic state. All of these cases are properly amenable to, and should undergo subtotal thyroidectomy. Success, failure, the recurrence of symptoms, and the permanence of cure depend upon, first, the proper preoperative preparation of the patient; second, efficient removal of a sufficiently large amount of thyroid tissue; and third, adequate postoperative observation and care and the removal of any excitatory influences which may have antedated the appearance of the thyrotoxicosis.

As indicated in a previous communication (1), proper preoperative preparation should include: 1, rest in bed, under hospital conditions, without visitors; 2, a high caloric diet (3500 to 4000 calories daily); 3, sufficient sedation by medical and physical means; and 4, final treatment with Lugol's solution.

The selection of the proper patient for operation, and, what is most important, the proper, opportune moment for operation, depends upon the success of preoperative preparation. Clinically, the following types of cases are found:

1. Cases in which the patients respond readily and quickly.

2. Cases in which a moderate amount of difficulty is present, chiefly in that the basal metabolic rate falls very slowly or not to the low level to which we should like it to fall. The basal metabolic rate does not furnish any aid in selecting an individual thyrotoxic case for operation. However, when a patient has been selected, the basal metabolic rate is a rough measure of the severity of the toxicity in most cases. In some cases, the basal metabolic rate does not seem to correspond with the clinical picture; and in these cases, nevertheless, it should be integrated in the total clinical picture with this reservation in mind. In any case, the basal metabolic rate is important in helping to determine the optimum time for operation.

In both of these groups the selection of the case is simple and the patient should be operated upon without delay after the proper period of treatment with Lugol's solution.

3. The cases in which marked difficulty in preparation is present. The difficulty is clinically apparent in that the patient's symptomatology does not improve, there is persistent loss of weight, and the basal metabolic rate remains at a high level. The ability properly to select the patients in this group for operation and to judge the opportune moment for operation, carries with it a nice sense of clinical judgment.

In the cases in group 3, the preliminary treatment without Lugol's solution should be persisted in for a much longer time, until all the possibilities of this treatment have been exhausted. Only then should Lugol's solution be administered. Rarely, a dramatic response occurs; the symptoms improve and the basal metabolic rate quickly falls to the desired low level; or, no improvement follows. The latter form the group of most difficut cases to manage; and the difficulty sometimes is insuperable. If Lugol's solution produces no effect within twelve or fourteen days, the chances are that no further good will be accomplished by it, as these patients have a tendency to become iodine-fast. They should nevertheless be immediately operated upon. If operation is not done at this most opportune moment, as described previously in this journal (1), it commonly happens that the good effect of the iodine as a preparatory measure for operation is completely lost, and can never again be accomplished. Operation done subsequently is, therefore done at a much increased risk. This tendency to become iodine-fast is an important factor commonly found in the makeup of hyperthyroidism.

Selection of Patients in the Presence of Complicating Factors

Difficulties in the selection of the proper patients for subtotal thyroidectomy are multiplied in the presence of other factors, and it then becomes necessary to further classify the cases in accordance with the presence of, 1, valvular or myocardial heart disease; 2, diabetes; 3, nasal accessory sinus disease; and 4, neuropsychotic disturbance.

1. Cardiac disease in the course of thyrotoxicosis is either a complicating valvular lesion originating on a rheumatic basis, a myocarditis based to a certain extent on a thyrotoxicosis, or a combination of the two. Clinically, this is an important differentiation.

In the cases with pure valvular lesions there is heart disease of long standing, and the selection of the patient for operation is determined, not upon the basis of the thyrotoxicosis alone or upon any expected therapeutic benefit of a subtotal thyrodectomy, but, in addition to the latter, operation is predicated upon the ability of the subject to stand any operation, that is, upon the state of efficiency of the cardiac effort (i.e., compensation vs. decompensation).

In the cases with myocardial disability (thyrotoxic heart disease) judgment is based upon the state of compensation of the cardiac effort. In cases with cardiac decompensation, even without any preceding rheumatic valvular lesions, there will be relative valvular deficiences and possibly other lesions in the vascular channels (hypertensive disease) and in the kidneys. Kidney lesions may also be present in the former group. In these cases the cardiac condition must first receive careful consideration before attention can be given to the thyrotoxicosis. The time element becomes important here. The opportune moment for the final preparation and for operation would be when the cardiac effort was at its best and some cardiac reserve was still present. The state of the vascular lesions and the renal condition should also receive attention.

In the cases which present combinations of all these factors the selection of the proper moment for any possible operation is not easy. These cases are by no means rare, and are the most difficult in medical practice.

Thyrotoxic patients with any of these forms of heart disease (valvular lesions, myocardial lesions, etc.) should be well prepared for the ordeal of subtotal thyroidectomy by the usual well tried physical and medical means. The preparation for operation should first take cognizance of the heart condition and then should proceed along the preliminary regime outlined previously (1) until the heart condition is put in as favorable a condition as possible. There should be no hurry about this cardiac preparation. The decision to operate should not be made hastily, or upon any preconceived grounds, but upon the extremely practical criteria of the success or non-success of the preliminary preparation designed to improve the cardiac disability to the possible maximum degree. Unless the improvement is so marked that there is fair assurance that the resultant cardiac effort and reserve are sufficient, operation should be rejected; otherwise, operation is but an open invitation to a fatality. In the favorable cases one should not look for too much improvement as a result of the lightening of the cardiac burden because of the depression of activity resulting from the elimination of the thyroid stimulus. The original overenthusiasm of the Boston school along these lines has not worked out so well in general surgical practice.

2. Glycosuria is occasionally encountered in thyrotoxic patients. Fortunately, with modern methods of diabetic control, the selection of the proper patient for operation can be based on all other factors outlined in this communication, with the exclusion of the diabetes. In diabetic conditions, operation is only temporarily postponed until the hyperglycemia and glycosuria are corrected.

3. Nasal accessory sinus disease with persistent postnasal drip is infrequently found in patients with thyrotoxicosis. When the rhinological condition is not corrected, the postoperative course after subtotal thyroidectomy is commonly disturbed by hyperpyrexia which frequently becomes alarming. The hyperpyrexia is undoubtedly due to an exacerbation of the nasal accessory sinus infection. In these cases operation should be decided upon the merits of the thyrotoxicosis. Operation should, however, be postponed until the rhinological infection is controlled by appropriate local treatment. The following case reports illustrate this.

Case I.—This was a moderatey severe case with a chronic postnasal drip due to an old nasal accessory sinus infection. This was one of the early cases and the nasal condition was disregarded on the theory that it was better to do the subtotal thyroidectomy first. The postoperative reaction was very severe, and for several days we were in doubt as to whether or not the patient would succumb. Finally, the temperature began to recede and the patient ultimately recovered.

Case II.—The second patient had a somewhat more severe thyrotoxicosis, with a similar rhinological infection which, however, was adequately treated before operation as an important part of the preoperative preparation. An uneventful operative recovery followed with rather less than the expected postoperative reaction.

4. In any of the clinical groupings of thyrotoxicosis (*vide supra*), regardless of the grade of severity of the toxic state which presents itself, cases are found in which psychotic symptoms of one kind or another, usually of the excitatory type, form the chief subjective symptomatology for which the patient seeks relief. The cardinal symptoms of thyrotoxicosis are usually present with and without exophthalmos and are easily elicited; but they seem to be overshadowed completely by the neuropsychiatric aberration. This aspect is well illustrated by the following case:

Case III.—A young married woman developed the classical physical objective signs of thyrotoxicosis, including a slight grade of exophthalmos. Subjectively, the complaint which brought her to her family physician was the mental aberration which made her believe that she could not adequately take care of her baby, and that she would develop an intense uncontrollable desire to urinate on the most bizarre occasions and in equally unusual places. She was otherwise entirely normal. She had consulted a psychiatrist as well as her personal physician and, in spite of the mental disturbance, or, possibly, because of it, they both advised a thyroidectomy. The operation was performed and there was a good recovery. Most of the objective signs—rapid pulse, "nervousness", etc.—disappeared. The mental aberration, however, which had improved for several months after operation, recurred.

It is quite apparent that it was a clinical error to operate upon this patient in the hope of obtaining a "subjective" cure. These mental aberrations are not amenable to any form of operation upon the thyroid and operation should be refused under the conditions indicated when the main subjective symptomatology is of a neuropsychiatric character. Only when the toxic objective symptoms are of such a severe grade as to demand correction in the fear of subsequent thyrotoxic heart condition, should subtotal thyroidectomy be considered. Then the patient's family should be taken into confidence and made completely aware of the futility of operation for the correction of the mental state and

of the clinical necessity of lessening the toxic state in order to prevent later cardiac complications. In the instance reported herewith, the medical men failed to take this precaution sufficiently, so that both the patient and her family were much disappointed at the therapeutic result.

Because of their increased metabolism, tolerance for heat is decreased in patients with thyrotoxicosis. Clinically, it is notorious how severe postoperative febrile reactions are, and how badly these patients behave generally, when operation is performed in the hot periods of our summer months. This is an important item in the make-up of these patients, and this factor should not be neglected when the moment comes to select the time for operation.

Medical vs Surgical Treatment

Medical treatment should be chosen exclusively in the presence of any of those complications or associated conditions which make it apparent that operation might result fatally. Medical treatment should also be selected, or rather persisted in, when there is extraordinary difficulty and/or impossibility in properly preparing the patient for operation; and this applies with special force to patients with cardiac disease. Medical treatment should be continued until any other associated medical condition—such as nasal accessory sinus disease—is adequately controlled. Medical treatment should be persisted in only as a temporary measure in all other cases in which, for social, economic or other nonmedical reasons, it is deemed necessary or advisable to postpone operation.

Whenever any of the complications mentioned above, because of which medical treatment is preferred, can be and are eliminated, medical treatment should be immediately abandoned for surgery. In all other cases, in which any or all of these disabilities do not exist, surgical treatment should be primarily chosen. In all of these cases, medical treatment is essentially important only as a preparatory measure for operation. The reasons for all of this are as follows:

1. In the vast majority of cases, the improvement or apparent "cure" following medical treatment is temporary. Sooner or later, a recurrence of the entire symptomatology takes place, usually in an aggravated form. With the repetition of these recurrences other irreversible complications, such as thyrotoxic heart disease, or liver degenerations, appear and grow increasingly more formidable; and the latter may determine otherwise avoidable fatalities.

2. The temporary character, in most instances, of the improvement or apparent "cure" after medical treatment, makes it imperative to find and use other methods to make permanent the medically produced effect. This is only possible in the greatest number of the cases treated by surgery, i.e., by subtotal thyroidectomy. In other words, one improves or "cures" the condition by medical means, and holds the improvement by surgery.

The Effect of Radiotherapy

Occasionally, very good and even brilliant results follow radiotherapy. In the presence of any of the aforementioned disabilities and/or complications, radiotherapy may be elected to take the place of surgery. In the vast majority of the cases, however, the results of surgery, i.e., subtotal thyroidectomy, are so much more brilliant and reliable that radiotherapy can in no way compete with it. Radiotherapy, possibly, finds a slightly useful sphere in postoperative recurrences; but here its effects are neither reliable nor predictable.

Appraisal of Results

In practically all instances, regardless of the symptomatology, the cure obtained after subtotal thyroidectomy is a "subjective" one. The patient states that he or she feels "well" or "cured". Nevertheless, in practically all cases many of the preoperatively demonstrable objective findings, such as exophthalmos and tremor, can be demonstrated postoperatively to some degree. There also continues some of the underlying potentiality for nervous disturbance which should be taken as a warning that, even if the patient is apparently subjectively cured, any undue and extraordinary stimulus can cause a recurrence of symptoms. For this reason a searching inquiry into the possible causative factors which produced the illness originally should be made with the object of eliminating them from the patient's life. In this regard, the home and the business influence and environment are of paramount importance. The selection of a case for operative therapy should therefore be predicated also to some extent with these criteria in mind, namely, upon the ability to remove permanently any of these disturbing factors from the life and environment of a potentially thyrotoxic individual.

Recurrent Cases

Recurrences of symptoms occur in a small proportion of the cases—probably ten to fifteen percent. These recurrences are based upon physical changes associated with an insufficient removal of thyroid gland substances; and/or with a hyperplasia and/or hypertrophy of the part of the gland left; or they are based upon undemonstrable biological chemical changes, either in the part of the gland left or in other glands of the endocrine system, notably the pituitary. Not always is there any increase in the basal metabolic rate, although there are cases, especially when there is secondary hypertrophic enlargement of the stump of the gland, where it can rise to a height comparable to that preceding operation.

When a full blown recurrence of symptoms occurs, the question of the proper selection of the patient for secondary operation and of the most opportune time for its performance arises again with an even greater force than before the primary subtotal thyroidectomy. The patient should be put through a course of observation and preliminary preparatory treatment exactly similar to that preceding the first operation with the same attention to any complicating factor. Then, at the opportune moment, all of the factors originally considered, in addition to any new factors which may have developed, must again be reconsidered, properly integrated and judgment rendered as to operative or nonoperative treatment—all of which being based upon the picture as presented at that given moment. The selection of the proper patient and the decision to operate again is not easy, and may be more difficult than at first.

Reference

1. WILENSKY, ABRAHAM O.: Modern treatment of thyrotoxicosis. MED. REC. 155:15:495-497 (Nov.) 1942.

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DIAGNOSIS OF MENSTRUAL DISTURBANCES BY MICROSCOPICAL EXAMINATION OF UTERINE SCRAPINGS

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The possibility of determining the cause of menstrual disturbances by a microscopical examination of uterine scrapings is based upon the following four conditions:

1. A knowledge of the normal histology of the uterine mucosa during the different phases of the menstrual cycle.

2. A knowledge of the different hormones which bring about and control the changes in the histology of the uterine mucosa corresponding to the different phases of the menstrual cycle.

3. A knowledge of the supposedly exact phase of the patient's menstrual cycle, at the time the scrapings were obtained.

4. A knowledge of the pathological histology of the uterine mucosa occurring in various abnormal conditions, particularly in pregnancy and tumors.

Disturbances of Menstruation

The following are the conditions connected with dysfunctions of menstruation, that bring the young adult woman to the physician for advice: 1, primary amenorrhea; 2, secondary amenorrhea, complete or incomplete; 3, dysmenorrhea; 4, metrorrhagia; 5, menorrhagia; 6, sterility.

In primary amenorrhea the patient is a young woman, who is past puberty but has not menstruated as yet. In secondary amenorrhea, menstruation has occurred at puberty, and may or may not have continued normally for some time and then fails to take place altogether (complete amenorrhea), appears only occasionally, or is scanty (oligomenorrhea).

In dysmenorrhea the patient menstruates normally, but the menses are accompanied by severe pelvic pain which occurs immediately before or with the onset of the flow. This is the chief symptom. In menorrhagia the patient menstruates at normal intervals, but the flow is excessive. In metrorrhagia the patient bleeds more or less from the uterus at the menstrual period, and also between the regular periods.

In sterility the patient may suffer from primary or secondary amenorrhea, or she may menstruate normally, and yet not be able to become pregnant in spite of a normal and patent vaginouterotubal canal, and normal spermatogenesis in her mate. It should be emphasized that in cases of sterility the microscopic examination of uterine scrapings is of value only when the genital organs of both partners have been examined and found to be anatomically normal, the function of the male organs also being normal.

To be able to interpret correctly the microscopic findings in uterine scrapings, it is essential to have a clear idea about the histology of the normal uterine mucosa and the metamorphosis that takes place during the course of each menstrual cycle. It is equally important to bear in mind the different factors which are responsible for these changes in the uterine mucosa in each successive stage of the menstrual cycle. The normal uterine mucosa presents different histological pictures, depending upon the particular stage of the cycle. These changes occur regularly under the influence of the hormones from the ovaries which, in turn, are influenced or governed by hormones from the pituitary and possibly other glands of internal secretion.

Phases of Menstrual Cycle

From an examination of many thousands of uterine scrapings obtained on different days of the menstrual cycle, observers concluded it was logical to recognize four phases, namely, resting phase, proliferating phase, secretory phase, and premenstrual phase.

During the socalled resting phase, which can be observed best in scrapings obtained within the first four days after cessation of the menstrual flow, the mucosa is composed of a background of more or less oval or round cells, the socalled interstitial cells, in which are embedded glandular structures. The latter are more or less round in cross section, straight in longitudinal section, uniform in shape and size, and equally separated from one another to a distance of about three to four diameters of a normal gland in cross section.

During the proliferative phase the glandular structures described above proliferate to a remarkable degree. They become larger, longer, nearer to one another, and irregular in size and shape. The mucosa as a whole shows some evidences of congestion, but no secretion in the glandular spaces and no appreciable changes in the interstitial cells.

During the secretory, pregravid or nidation phase, the glandular structures undergo a high degree of hyperplasia. They grow longer, become tortuous and corkscrew like, with bud-like projections into the lumen, in which appear also scanty secretions. During this phase the interstitial cells also show changes. They become larger, their cytoplasm paler, and show a tendency to acquire a distinct cell membrane. This phase offers a suitable soil for the fertilized ovum, and a secure nest for the development of the embryo. Hence, the term "nidation or pregravid phase".

During the postmenstrual phase, which corresponds to the time of menstrual flow, the scrapings may show a histological picture composed of long, tortuous and infolding glandular structures corresponding to the pregravid phase, and also of small, straight, uniform glands, arising from the already recuperating part of the mucosa corresponding to the resting phase.

The proliferating phase develops under the influence of the ovarian hormone, estrogen or theelin. This hormone is formed in the ovarian follicle under the influence of a hormone from the anterior pituitary, prolan A. The ovarian hormone, estrogen, increases in amount from the early days of the menstrual cycle and disappears more or less suddenly shortly before the onset of the menstrual flow.

The secretory, nidation or pregravid phase occurs under the influence of the ovarion hormone, progestin. This hormone is elaborated by the corpus luteum, after the rupture of the graafian follicle. It is produced by the lutein cells of the corpus luteum under the stimulation of the anterior pituitary luteinizing hormone,

prolan B. Progestin appears shortly after ovulation, which takes place about fourteen days after the beginning of the last menstrual flow. It increases steadily in amount until about the time of onset of menstruation, when it begins to decrease rapidly, unless successful nidation of a fertilized ovum occurs in the pregravid mucosa, in which case the ovarian hormone, progestin, continues to exert its influence on the uterine mucosa, and is instrumental in bringing about the profound changes produced in the interstitial cells of the uterine mucosa, leading to the formation of the socalled decidua of pregnancy cells. These are large, polyhedral cells with definite cell membranes, pale cytoplasm and small, well-stained nuclei. They occur in large sheets and are easily discernible.

The postmenstrual phase is the result of the rapid destruction of the hyperplastic endometrium following the withdrawal of the follicular hormone, estrogen or theelin, and the degeneration of the corpus luteum.

In addition to the influences of the various hormones on the uterine mucosa, directed by the ovaries (hormones) and indirectly by the pituitary, the contraction of the uterine muscle during the periodic menstrual flow is also under the control of estrogen and progestin. The former stimulates the uterine muscle to contract, while the latter relaxes it either directly by acting on the muscle, or indirectly by neutralizing the effect of the former.

It is evident, therefore, that the normal menstrual cycle, including normal periodicity, quantity and duration of flow, as well as the absence of undue discomfort and the capability to conceive, depends upon a sufficient amount of, and a proper balance between the above mentioned hormones.

It further follows that in menstrual disturbances two kinds of investigations are called for; one to establish the integrity of the organs directly concerned with menstrual function, and the other to investigate the function of the endocrine glands controlling the menstrual function. The first investigation is carried out by a complete history and physical examination, including radiographs of the genital tract and a Rubin test. The second investigation is accomplished by histological examination of the uterine scrapings, obtained, as a rule, at any time, but on more than one occasion in cases of amenorrhea; in other disturbances a day or two before the expected onset of the menstrual flow.

In cases of amenorrhea, uterine scrapings showing atrophy of the mucosa or only a resting phase, point to a hypofunction of the ovaries or anterior pituitary, or both. To differentiate this condition further, it is necessary to assume that the amenorrhea is due to a hypofunction of the anterior pituitary, put the patient on corresponding substitution therapy in the form of antuitrin S, or a similar product, and examine another sample of uterine scrapings at a later date. If the assumption is correct, the scrapings will now show a glandular hyperplasia corresponding to the proliferative or secretory phase, depending upon the time interval between the first and second curettages, as well as upon the dosage and efficiency of the hormone used. Such a result will further indicate that the ovaries are intact and lack only the proper stimulation from the pituitary hormones. On the other hand, if the second scrapings, obtained after substitution therapy with the use of anterior pituitary hormone, show no change, the ovaries are at fault. Under these conditions substitution therapy by estrogen followed by progestin should produce a pregravid phase in the uterine mucosa, provided the latter is still responsive to hormone stimulation.

In dysmenorrhea, uterine scrapings obtained shortly before the expected onset of the menstrual flow frequently show a proliferative phase, only without the tortuosity and infolding of the gland lining characteristic of the nidation phase. This points to a lack of progestin, and suggests one of three possibilities, as to its cause, namely: 1, insufficient luteinizing hormone, prolan B; 2, insufficient lutein hormone progestin, because of a lack of response on the part of the ovary to prolan B; 3, excess of follicular hormone estrogen over neutralizing physiologically a normal amount of progestin.

In the first instance, substitution therapy by anterior pituitary hormone is indicated; in the second and third instances, progestin during the second half of the menstrual cycle is indicated.

In menorrhagia, uterine scrapings obtained shortly before the expected onset of the flow are apt to show an overproliferation of the glandular structures and congestion, and only slight evidences of a hyperplasia corresponding to the secretory phase. A histological picture like this again points to a deficiency of progestin, which, in turn, has its cause in hypofunction of the ovaries, the pituitary, or both.

In metrorrhagia, it is desirable to obtain the uterine scrapings for diagnostic purposes during the supposed proliferating phase. At this time a hyperplasia of the uterine mucosa of a swiss-cheese appearance is indicative of an increased production of estrogen, and a relatively decreased amount of progestin, creating thereby an improper balance between the two ovarian hormones. The same condition may be brought about indirectly by an increased supply of prolan A, or a decreased supply of prolan B to the ovaries.

In sterility the proper time for curettage is a day or two before the expected period. Inasmuch as a fully developed nidation phase is essential for the fertilized ovum to continue its development in the uterus, the absence of this phase in the scrapings at once establishes the cause of sterility and is also indicative at the same time of a deficiency of the corpus luteum hormone, progestin.

It should be realized that in order to interpret the histological findings of the uterine scrapings correctly, it is necessary not only to observe the microscopic picture of the uterine mucosa, but also to know at what supposed stage of the patient's menstrual cycle the scrapings were obtained. The time of the cycle, at which the curettage is to be done, depends upon the particular complaint which brings the patient to the attention of the physician.

It is sometimes even necessary to do more than one curettage before a diagnosis can be made. Thus, in cases of amenorrhea several curettages have to be done, and the scrapings studied in order to see whether the uterine mucosa undergoes any changes which would be indicative of the action of one or another of the hormones concerned with menstrual function. In dysmenorrhea and sterility, the scrapings obtained just before expected menstruation will be of more diagnostic value than those obtained at any other time. In metror-

rhagia, scrapings obtained in the middle of the cycle are desirable for study, while in menorrhagia, those secured at the end of the cycle are more likely to show the cause of the disturbance.

In cases of irregular bleeding, it is of prime importance, before any treatment is instituted, to exclude or corroborate a possibility of malignancy, unsuspected pregnancy, or retained products of conception sometime after a supposedly complete spontaneous or induced abortion. In such cases curettage should be done thoroughly, all scrapings saved, and a sufficient number of sections studied. These simple precautions will serve to safeguard all concerned against an erroneous or missed diagnosis.

As hinted in my preliminary remarks, this paper lays no claim to formulating entirely new methods of diagnosis. It has been prepared only with the hope that the information offered in it may enable the general practitioner to visualize the problem of menstrual dysfunctions more clearly, and, therefore, to be able to plan treatment more intelligently.

NORTHERN LIBERTIES HOSPITAL

EDEMA AND TOXEMIA OF LATE PREGNANCY*

Possible Relation of the Fetal Adrenal Glands to Sodium and Potassium Imbalance

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In well conducted maternity clinics, as well as in private practice, the incidence of toxemia is markedly reduced and eclampsia is a rarity. This is in direct contrast to poorly supervised groups in which toxemia and eclampsia are not infrequent. The main recommendations advanced are a reduction of sodium intake plus the addition of leafy vegetables, fruits, milk and meat; also, more rest, adequate water intake, and bowel hygiene. It would seem that these simple rules would not make so much difference in the incidence of edema and toxemia if the causative agent was not some simple thing capable of asserting itself in any or every pregnancy.

Evidence is herewith presented which suggests that in the last trimester of pregnancy the extra cortical secretion from the fetal adrenal glands, with a low potassium and high sodium intake, is productive of edema in the mother. This, if not alleviated, may proceed to pre-eclampsia and eclampsia.

Toxemia of pregnancy is a clinical term used to denote many conditions, the cause or causes of which are unknown or uncertain. It is considered outmoded to use the term without further classification. Some late toxemias are obviously based on a pre-existing condition such as nephritis or cardiovascular disease and some occur in apparently healthy women, who again are healthy after the pregnancy is over (1, 2, 3, 4, 5).

In this study we are concerned with edema and toxemia which occurred in healthy women in the last trimester of pregnancy. A patient was classified as being edematous if any part of the body, face or extremities was noted as being puffy or swollen. The diagnosis of toxemia was made for edema, hypertension and albuminuria, in varying combinations, but not for edema alone unless it was extraordinary.

Toxemia and edema are considered together because they are often associated and are probably related. Mussey and Randall (6) believe edema to be a constant finding in pre-eclamptic toxemia. The weight gain during pregnancy, some of which is due, presumably, to water retention, was found by Randall (7) to be fifty percent more in toxic than in normal cases. Zangemeister (8) found edema to precede albuminuria in all his cases, with the exception of those with chronic nephritis.

Edema is caused by a number of conditions, some of the main theories being: a change in the permeability of the capillaries, lowered osmotic pressure, diminished elasticity of the tissues, local obstruction, a decrease in the protein of blood plasma, posture, avitaminosis, kidney complications, cardiac disorders and endocrine dysfunction (9, 10, 11, 12). It may occur in nonpregnant as well as in pregnant women, but occurs frequently in late pregnancy in women, who apparently, were previously healthy. The influence of sodium chloride upon edema has been known for a number of years. Matas (13), in 1924, observed that prolonged intravenous drip of sodium chloride solution caused edema in the nonpregnant. Dexter and Weiss (14) quote Zangemeister as advocating in 1910 a salt free diet in the prevention and treatment of edema and toxemia. Hermann (15) in 1923 noted that when edema was successfully treated there was also a fall in the arterial pressure. De Snoo (16) advised a salt free diet in 1924 and came to the conclusion that without sodium chloride retention there was no eclampsia.

The frequency with which edema precedes toxemia, its apparent controllability and the behavior of electrolytes in Addison's disease stimulated these observations. The results seem to indicate that edema during late pregnancy, otherwise unexplained, is the reverse of Addison's disease; that is, there is too much adrenal cortical hormone rather than too little.

In Addison's disease the extracellular spaces are deficient in sodium, it being excreted from the body via the urine (17). The reabsorption of sodium salts and, to a lesser extent, water is blocked by the ablation of the adrenal cortical substance (18). The converse of this is true: adrenal cortical tissue facilitates the reabsorption of sodium and water from the tubules of the kidneys (19). A normal solution of sodium chloride is gradually eliminated by the kidneys, while normal potassium is secreted at least as fast as water (20).

When there is an excess of sodium the extracellular spaces expand, as the volume of the body fluids is less vigorously guarded than composition (21). The body fluids tend to have a constant osmotic concentration (22, 23).

It is my belief that a disturbance in the distribution of electrolytes is the main cause of edema during pregnancy. This view is taken because of the known action of the adrenal cortex and of the recognized anatomical variations in fetal adrenal glands and because

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decreasing the sodium intake and increasing the potassium seemed to prevent or minimize this disturbance.

Facts Apparently Pertinent

1. After delivery of the baby, edematous patients commonly excrete large quantities of urine, and the edema disappears. Delivery is analogous to extirpation of the fetal adrenal glands.

2. In diabetes mellitus the fetal islands of Langerhans affect the mother's utilization of blood sugar (24).

3. The cortex of the fetal adrenal gland ordinarily hypertrophies during pregnancy (25, 26). In the series previously reported, the mothers of fetuses with large adrenal glands had a greater incidence of edema and toxemia than those with small adrenal glands (27). The mothers of twins, in which there are twice the number of adrenal glands, were found to have edema and toxemia three times more frequently than the mothers with one child. In contrast to this, edema and toxemia were very infrequent in mothers of anencephalic monsters which have minute adrenal cortices.

4. Patients with Addision's disease have been noted to improve during pregnancy (28).

5. A correlation has been found between the size of adult adrenal glands and hypertension (29).

6. In studying the effect of doca (adrenal cortex) upon the concentration of sodium and potassium, Loeb (30) found that the amount of sodium increased and the potassium decreased when doca was given. When potassium chloride was administered with doca, the increase in sodium was inhibited.

7. Lundin and Scharf (31) found that the administration of sodium chloride to normal sheep caused a small amount of sodium chloride retention, but a marked retention was noted when given to pregnant sheep.

8. Stewart and Rogoff (32) found that after adrenalectomy dogs lived seven times longer when pregnant that the nonpregnant control. This would seem to indicate that the sodium potassium balance was maintained by the fetal adrenal glands.

Observations Thought to be Correlated

1. Tall, slender, dry-skinned women have edema and toxemia less frequently than stocky ones with florid complexion and moist skin; these have been called asthenic and pyknic types respectively (33). It is thought that the latter group have more cortex in their own adrenal glands or in accessory cortical tissue and it is assumed that the extracellular volume is greater in pyknic than in asthenic individuals.

2. Patients with hypothyroidism require less thyroid substance for maintenance in late pregnancy (34), which is presumptive evidence that the thyroid of the fetus has become active.

3. Blood and urine from patients with Cushing's disease prolong the life of adrenalectomized animals and potassium excretion is increased (35). These findings are directly opposite to Addison's disease and some aspects of Cushing's disease can be compared with preeclampsia.

4. The slow return to normal that is noted in some cases after delivery may be due to compensatory atrophy of the maternal adrenal glands. It has been observed that when an excess of cortical tissue is given for prolonged periods the adrenal glands atrophy (36).

The correlation between the fetal adrenal glands and the edema and toxemia of late pregnancy has been described in a previous report (37). In that report the adrenal glands of seventy-four stillborn infants were weighed. The fetuses born of toxic mothers were found to have adrenal glands fifty percent heavier than the fetuses born of nontoxic mothers and twelve times as heavy as the glands of anencephalic monsters. Almost all the mothers of fetuses with large adrenal glands (over seven grams each) were edematous or toxic, while very few of the mothers of fetuses with small adrenal glands (under five grams each) were. However, as many of the cases were in the middle group according to weight, and because of the known higher fetal mortality in toxic patients (38, 39) the findings were thought not to be conclusive as to the fetal adrenal glands being the sole cause of edema and toxemia. The missing factor was considered to be an excess of sodium and a deficiency of potassium in the diet.

The possible importance of extra potassium in the diet during late pregancy, especially when there is edema, was indicated by the above theoretical considerations, as well as by the reports of its beneficial action in the treatment of nephrotic edema (40), nephritic edema (41), familial periodic paralysis (42, 43), menstrual edema (44), Ménière's disease (45, 46), allergy (47), pollinosis and sinusitis (48), and by certain laboratory experiments (49, 50, 51, 52, 53). These laboratory experiments indicate that potassium aids in the excretion of sodium and water, thus helping to maintain a normal electrolyte balance in the tissues.

It has been shown that potassium intake is important during Addison's disease and increasing the amount can cause a crisis with the same amount of sodium intake (54, 55). When one considers how many people boil the potassium and other minerals out of vegetables, add sodium chloride for taste, but make no effort to replace the potassium, the extent of the change in the mineral content is realized (56).

On the theory that potassium would counterbalance the sodium in the tissues and aid in the excretion of sodium chloride through the tubules of the kidneys, potassium chloride was given to thirty-three clinic patients[1] at the Woman's Hospital and to six private patients. In these cases potassium was not prescribed until it was noted that the response to a salt poor diet was unsatisfactory. All the patients were in the last trimester of pregnancy and most of them were in the last month. Potassium chloride in ten grain doses, three times a day, was prescribed.

In all the clinic patients except one, an improvement in edema was noted. In every instance the private patients improved. Several of the patients thought they passed more urine after taking potassium. The specific gravity of the urine was found to be higher when more urine was passed and the edema was diminishing.

Hypertension was usually controlled. The blood pressure seemed to go up after the edema appeared and not to come down until after the edema had disappeared or diminished. If hypertension had been present early in pregnancy or before, the potassium therapy had no effect.

Recent experiments have shown that edematous kidneys do not function properly and elevated blood pres-

[1]Comparable effects were obtained with potassium citrate in several clinic and private cases.

sure sometimes ensues (57, 58, 59). These conditions are somewhat analogous to the kidneys during pregnancy, if it can be assumed that the kidneys share in the general edema. It is easy to imagine that this is the case, as the chain of events is similar and kidney function, in so far as it can be measured, is comparable (60, 61, 62, 63).

Homer Smith, in studying the physiology of the kidney, found that a saline solution caused a diminution in the amount of excretion which he was unable to explain except by the kidney function being diminished on account of the edema. He pointed out that the tubules of the kidney were perfused with interstitial fluid (64).

Summary

The sodium and potassium distribution in the cells and intercellular spaces is upset by an excess of adrenal cortex. During late pregnancy it may be assumed that this excess comes from the fetal adrenal glands. Edema is a frequent finding in late pregnancy and is prevented or controlled in most cases with a low sodium chloride intake.

Potassium therapy was instituted in thirty-nine edematous gravidæ who failed to respond to low sodium intake. Edema was lessened in every case except one, and in over half the cases, disappeared completely. Many patients volunteered the information that an increase was noted in the amount of urine passed. Hypertension was alleviated if it had not been elevated over a long period of time. The medication is inexpensive and was not found to be objectionable to take.

Conclusions

It is proposed that the hypertrophied fetal adrenal glands with an excess of sodium and a deficiency of potassium are a cause of edema and toxemia of pregnancy.

It would seem advisable to have pyknic patients begin to reduce their intake of sodium chloride after the fourth month of pregnancy. They usually have a decided liking for highly seasoned foods. All patients who have edema in the last trimester of pregnancy should be on a salt poor diet in addition to the usual hygienic measures. Potassium therapy should be instituted if the edema does not regress satisfactorily.

During pregnancy, sodium chloride should be regarded as medicine rather than food.

Bibliography

1. Herrick, W. W., and Tillman, A. J. B.: *Arch. Int. Med.* 55:643, 1935.
2. Kellogg, F. S.: *Amer. Jour. Surg.* 35:300, 1937.
3. Dieckmann, W. J.: *Amer. Jour. Obst. and Gynec.* 33:131, 1937.
4. Stander, H. J.: *Amer. Jour. Surg.* 48:112, 1940.
5. McPhail, F. L.: *J.A.M.A.* 3:1897, 1938.
6. Mussey, R. D., and Randall, L. W.: Curtis, *Obstetrics and Gynecology* 1:1028. W. B. Saunders Co., 1933.
7. Randall, L. W.: *A. J. Obst. and Gynec.* 9:529, 1925.
8. Zangemeister, W.: *Der Hydrops Graridarum*, 491-558, p. 496, *Ztschr. f. Geburtsh. u. Gynäk.* 81, 1919.
9. Nixon, W. C. W.: *B. J. Obst. and Gynec.* 45:48, 1938.
10. Fishberg, A. M.: *Hypertension and Nephritis*, Lea & Febiger, Philadelphia, 1936, p. 747.
11. Arnell, R. E., and Guerriero, W. F.: *Amer. Jour. Obst. and Gynec.* 43:467, 1942.
12. Straus, M. B.: *Jour. Clin. Invest.* 17:509, 1938.
13. Matas, R.: *Amer. Jour. Surg.* 79:643, 1924.
14. Dexter, L., and Weiss, S.: *Preeclamptic and Eclamptic Toxemia of Pregnancy.* Little, Brown & Co., 1941.
15. Herrmann, E.: *Die Eklampsie und ihre Prophylaxe*, Urban und Schwarzenberg, Berlin und Wein, 1929.
16. De Snoo, K.: Vier Falle dieden Einfuss der "salzlosen" Kost zeigen sollen. In H. Hinselmann, *Die Eklampsie*, Friedrich Cohen, Bonn, 1924.
17. Loeb, R. F.: *J.A.M.A.* 104:2177, 1935.
18. Baumann, E. J., and Kurland, S.: *Jour. Biol. Chem.* 71:281, 1927.
19. Shohl, W. T.: *Mineral Metabolism*, Riengold Publishing Corp., New York, 1939, p. 76.
20. Peters, J. P.: *Bodywater: the Exchange of Fluids in Man.* Charles C. Thomas, 1935, p. 329.
21. McLester, J. S.: *Nutrition and Diet in Health and Disease.* W. B. Saunders Co., Philadelphia, 1939, p. 44.
22. Darrow, D. C., and Yannett, H.: *Jour. Clin. Invest.* 14:266, 1935.
23. Gamble, J. L.: *Bull. Johns Hopkins Hosp.* 61:151-173, 1937.
24. Carlson, A. J.: *Surg. Gynec. and Obst.* 25:283, 1917.
25. Boyd, W.: *Textbook of Pathology.* Lea & Febiger, 1938.
26. Pappenheimer, A. M.: *Jour. Med. Res.* 34:81, 1916.
27. Parks, T. J.: *Jour. Clin. Endocrinology*, 9:784, 1941.
28. Middleton, W. S.: Curtis, *Obstetrics and Gynecology* 1:947, 1938.
29. Rhinehart, J. F., Williams, O. O., and Cappeller, W. S.: *Arch. Path.* 32:169, 1941.
30. Loeb, R. F.: *Harvey Lectures* 37:100, 1942.
31. Lundin, H., and Scharf, R.: *Jour. Metab. Res.* 8:260, 1926.
32. Stewart, G. N., and Rogoff, J. M.: *Proc. Soc. Exp. Biol. and Med.* 23:190, 1925.
33. Draper, G.: *Diseases and the Man.* Kegan, Paul, Trench, Trubner and Co. Ltd., London, 1930, p. 101.
34. An Editorial: The fetal function of the thyroid, *J.A.M.A.* 114:2463, 1940.
35. Anderson, E., Haymaker, W., and Joseph, M.: *Endocrinology* 23:398, 1938.
36. Selye, H.: *J.A.M.A.* 115:2246, 1940.
37. Parks, T. J.: *Jour. Clin. Endocrinology* 9:784, 1941.
38. Watson, B. P., and Tillman, A. J. B.: *Amer. Jour. Obst. and Gynec.* 29:19, 1935.
39. Brown, F. J., and Dodds, G. H.: *Jour. Obst. and Gynec. Brit. Empire* 47:549, 1940.
40. Goudsmit, A., and Binger, N. W.: *J.A.M.A.* 114:2515, 1940.
41. Bassett, S. H., Elden, C. A., and McCann, W. S.: *Jour. Nutrition* 5:1, 1932.
42. Prudent, R. H., McIntosh, J. H., and McEachern, D.: *J. Clin. Invest.* 17:530, 1938.
43. Ferrabee, J. W., Atchley, D. W., and Loeb, R. F.: *Arch. Neurol. and Psychiat.* 44:830, 1940.
44. Thorne, G. W., and Emerson, K.: *Ann. Int. Med.* 14:757, 1940.
45. Furstenberg, A. C., Lashmet, F. H., and Lathrop, F.: *Ann. Otol. Rhin. and Laryng.* 43:1035, 1934.
46. Talbott, J. H., and Brown, M. R.: *J.A.M.A.* 114:125, 1940.
47. Harsh, G. F., and Donovan, P. B.: *Jour. Allergy* 13:105, 1942.
48. Parker, F. P.: *South Med. Jour.* 33:1301, 1940.
49. Wiley, F. H., Wiley, L. L., and Waller, D. S.: *Jour. Biol. Chem.* 101:73, 1933.
50. McCance, R. A.: *Proc. Royal Society* 119 B:245, 1936.
51. Miller, H. G.: *Jour. Biol. Chem.* 67:71, 1926.
52. Keith, N. M.: *Amer. Jour. Physiol.* 119:347, 1937.
53. MacKay, E. M., and Butler, A. M.: *Jour. Clin. Invest.* 14:923, 1935.
54. Wilder, et al: *Arch. Int. Med.* 59:367, 1937.
55. Greene, J. A., David, A., and Johnston, G. W.: *Jour. Clin. Endocrinology* 2:49, 1942.
56. Sister Mary Victor: *Jour. Amer. Diet. Assoc.* 14:10, 1938.
57. Goldblatt, H.: *Harvey Lectures* 33:237, 1938.
58. Ravich, A.: *Jour. Urol.* 46:641, 1941.
59. Goldring, W., Chasis, H., Ranges, H. A., and Smith, H. W.: *Jour. Clin. Invest.* 20:637, 1941.
60. Taylor, H. C., Wellen, I., and Welsh, C.: *Amer. Jour. Obst. and Gynec.* 43:567, 1942.
61. Dieckmann, W. J.: *A. J. Obst. and Gynec.* 41:1, 1941.
62. Chesney, L. C., and Chesney, E. R.: *Amer. Jour. Obst. and Gynec.* 42:976, 1941.
63. Dill, L. V., Isenhour, C. E. Cadden, J. F., and Schaffer, N. K.: *A. J. Obst. and Gynec.* 43:32, 1942.
64. Smith, H. W.: *W. H. Welch Lectures* (to be published).

DIABETES MELLITUS

A Symptom Complex, Not a Disease Entity

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Diabetes mellitus has been generally considered an hereditary disease dependent upon a decrease in the quantity or activity of insulin produced by the islands of Langerhans. Of late it has been realized that this definition (1), relying upon glycosuria, hyperglycemia and lack of insulin, is not satisfactory since it is not applicable to all cases of diabetes. It has become evident that other factors besides changes in the pancreas and in insulin production may be concerned in the causation of diabetes. It seems to me, however, that sufficient evidence has now accumulated to justify the suggestion that we abandon the concept of diabetes mellitus as a disease entity and consider the triad, 1, hyperglycemia; 2, glycosuria, and 3, reduction in sugar tolerance, as a symptom complex that may be found in a variety of bodily disorders.

Four Groups of Diabetics

A large number of diabetics, the largest in percentage of their age group, develop their symptom complex at, or about, the sixth decade of their life. Diabetics of this group are, as a rule, above the average in weight. Their diabetic condition is mild or moderate, rarely severe, and is easily controlled by reducing their food intake to the level of their food requirement.

Individuals at this age usually suffer a reduction in all bodily functions. Their visual, auditory, locomotor, digestive and other functions are decreased. If a person in this age group insists upon working as hard as he did before, or in straining his organs beyond their reduced capacity for work, he suffers a breakdown in the functional capacity of those organs.

One's ability to metabolize food is also reduced with age. If an older person insists upon taking more food than the reduced activities of his body require, he accumulates fat. If he continues to eat more than his reduced ability to metabolize food permits, he may develop hyperglycemia and glycosuria. Reduction of food intake to the level of food tolerance corrects this condition. Rarely, if ever, did one of the aging diabetics under my observation require insulin treatment, except in the cases of gangrene infection.

A second group of diabetics, numerically the largest, develop diabetes at forty to fifty years of age. The patients in this group, the majority of whom are women, have certain characteristics in common. They usually gain weight prior to the discovery of their diabetic symptoms; their sugar tolerance decreases rapidly to below their maintenance requirement; and they need insulin to supplement their dietary treatment.

I venture to suggest that the etiological factor of the diabetic triad *in this group of patients,* is an overactivity of the anterior pituitary, which is initiated by dysfunction of the ovaries during the menopause.

I will cite a few of the innumerable facts uncovered by many investigators concerning the influence of the anterior pituitary on carbohydrate metabolism.

a. The anterior pituitary produces several hormones, among them the gonadotropic, thyrotropic, corticotropic, lactogenic, growth stimulating hormone, and others.

b. The gonadotropic hormone stimulates the secretions of the ovaries. Estrogen, in turn, acts as a check on the gonadotropic activity of the anterior pituitary, and the disappearance of estrogen seems to act as a removal of the inhibitory influence on the hormones of the anterior pituitary. "It has been found," writes Evans (2), "that women who, for any reason, have partial or complete loss of ovarian function, often excrete considerable amounts of gonadotropic hormone; e.g., after the menopause, after operative removal of the gonads, after roentgen castration, after hypogonadism resulting from pathological processes in the gonads." Dysfunction of the ovaries during and after the menopause may therefore act like the removal of a brake, at least, on the gonadotropic activities of the anterior pituitary.

c. The various hormones of the anterior pituitary have not yet been isolated in their pure form, and there is a strong possibility that there is a close interrelationship between those hormones, and what influences any one of them may also affect the others.

d. Zondek (3) reports that injections of estrone interferes with the growth stimulating hormone of the anterior pituitary. McEvan (4) states that estrone in small doses and testosterone in large doses inhibit growth, while testosterone in small doses may be stimulating to the pituitary and secondarily to growth. Evans (5) says that "the smaller size of the female among mammalia may be related to the inhibition of growth by estrone and the greater size of the male to the stimulation of growth by testosterone." The tendency toward slight acromegalic changes observed in some women after the menopause might also be explained on that basis.

e. Teel and Watkins (6) reports that among the earliest noted effects of the growth factor on metabolism was the action on protein or nitrogen metabolism, namely, the decrease of the nonprotein nitrogen and amino acid nitrogen of the blood and of urinary total nitrogen. Shipley and Long (7) have felt that the ketogenic, the growth promoting and the diabetogenic hormones of the anterior pituitary are identical.

f. Johns et al. (8) reported that the administration of large doses of anterior pituitary extract in well nourished dogs, cats or rabbits produced a gradual but maintained rise of blood sugar, beyond glycosuria levels, moderate ketonuria, increased excretion of nitrogen, and other symptoms of diabetes. Lukens and Dohan (9) reported the production of diabetes in partially depancreatized cats, with a saline extract of the anterior pituitary. The cats were not made diabetic by the partial removal of the pancreas. The hyperglycemia produced by the injections of anterior pituitary extract, if not continued too long, or if counteracted by injections of insulin, produced no permanent damage to the remaining pancreas: on the other hand, if the hyperglycemia was continued for long time, permanent

damage to the pancreas was produced, giving rise to a condition of permanent diabetes. "In pituitary diabetes in the cat," they report, "the islands of Langerhans showed hydropic degeneration for the first three months of diabetes, which included the early period of the permanent phase. After four months the pancreatic islands had undergone atrophy and, to a small extent, fibrosis.

g. When cats with permanent diabetes were treated with insulin before the fourth month of diabetes, it was found that the dose could be gradually decreased and finally discontinued altogether. The animals then remained free of glycosuria and hyperglycemia, and gained weight for a period as long as three months after the cessation of insulin treatment. The islands of Langerhans in such cats displayed an almost complete anatomical recovery. In contrast, animals in which treatment was not begun until four months after the onset of diabetes failed to recover, and as noted, their islands had become atrophic." This may explain why diabetes of long standing is not curable even after correcting the original endocrine imbalance which produced it, and it raises the hope that diabetes of pituitary origin, if treated early enough, might be completely cured.

h. Tolksdorf and Jensen (10) came to the conclusion that the thyrotropic factor of the anterior pituitary is identical with the interstitial cell-stimulating, or luteinizing factor, since all pituitary fractions containing thyrotropin proved also to be active luteinizers, and *vice versa*. And Coggeshall and Greene (11) have found that "thyroid feeding depletes hepatic glycogen, even though the animals (albino rats) are on a diet high in carbohydrates. The conclusion was drawn that thyroid hormone not only depletes hepatic glycogen, but also injures the liver, so that it is unable to store glycogen."

From what has been said thus far it is obvious that diabetes occurring in women during the menopause may be of anterior pituitary origin, initiated by a dysfunction of the ovaries.

A third group of diabetics consists of adults, between the ages of twenty and forty. In these cases the diabetic symptom complex usually develops after repeated illnesses, infections, parturition, or mental or physical shocks, especially if the patients also indulge in overeating.

These diabetics seem to have inherited a potentially weak body mechanism. There are others, nondiabetics, of the same age group who, when exposed to excessive or even to ordinary strain, become psychotic or develop arteriosclerosis or other cardiovascular degenerative changes. They seem to be unable to withstand the stress and strain of life which the average person meets successfully.

A discussion of the manner in which the metabolic processes are affected in these individuals is not within the scope of this contribution. I wish only to point out that in these persons the disorder is more closely related to that of the young psychotic or arteriosclerotic than to the diabetic in the climacteric period or in ageing persons.

A fourth group of diabetics consists of children. In this group we must assume that the diabetes is a congenital condition, an inherited disorder of metabolism. Some of these youngsters under my observation were rather taller than the average height for their age, and I often wondered whether this was not an indication of disturbance in the thymus-pituitary relationship, with consequent increase in the growth stimulating hormone of the anterior pituitary.

It seems to me that diabetes in the four groups enumerated above, namely, young children, adults (with inherited weakened resistance), middle aged (climactic) and ageing persons, is not the same disease. Individuals of the above four groups have nothing in common with each other except their symptom complex of reduced carbohydrate tolerance, glycosuria and hyperglycemia.

At the present time, whenever the diagnosis of diabetes mellitus is made, the patient is treated either by diet alone, if his food tolerance is equal to or greater than his food requirement, or with the diet plus insulin, if his food tolerance is less than his food requirement, and we let it go at that.

Should we consider hyperglycemia, glycosuria and a reduced sugar tolerance only as symptoms accompanying various disorders, we would continue to treat the patients with diet and insulin, but we would also continue to search for the condition and attempt to remove the cause or causes of the condition in which the diabetic triad is but one of the resulting complications.

If we are to look at ageing diabetics as persons who can no longer metabolize as much food as they could in previous years, just as they can no longer work as hard, walk as fast, see and hear as well as they could earlier in life, no one need be surprised nor discouraged by the increasing number of such "diabetics" in our ageing population. The number of diabetics would be markedly decreased by the elimination of those for whose symptoms an assignable cause can be found, and our attention could be concentrated on those cases in which the causes for the diabetic triad are not so easily demonstrable.

Bibliography

1. Mosenthal, H.: Tice's *Practice of Medicine* 9:6, pp. 69-134.
2. Evans, H. M.: Clinical manifestations of dysfunction of the anterior pituitary. *J.A.M.A.* 104:464, 1935.
3. Zondek, B.: The inhibitory effect of follicular hormone on the anterior lobe of the pituitary gland. *Lancet* 1:10-12, 1936.
4. McEvan, C. S., et al: Effect of testosterone on somatic growth. *Proc. Soc. Exper. Biol. and Med.* 36:390-94, 1937.
5. Evans, H. M.: Glandular physiology and therapy. *J.A.M.A.* 117:4, 1941.
6. Teel, H. M., and Watkins, O.: Effects of extracts containing the growth principle of the anterior hypophysis upon the blood chemistry of dogs. *Amer. Jour. Physiology* 89:662, 1929.
7. Shipley, R. H., and Long, C. N. H.: Studies of the ketogenic activity of the anterior pituitary. *Biochem. Jour.* 32:2242, 1938.
8. Johns, W. S.; O'Mulvenny, T. O.; Potts, E. B., and Laughton, N. B.: Studies on the anterior lobe of the pituitary body. *Amer. Jour. Physiology* 80:100, 1927.
9. Lukens, F. W.; Dohan, F. C., and Cox, G. S.: Med. Research Ins., Univ. of Pa. *Endocrinology* 50:175, 1942.
10. Tolksdorf, S., and Jensen, H.: Mechanism of pituitary gonadotropic antagonism. *Proc. Soc. Exp. Biol. and Med.* 42:466, 1939.
11. Coggeshall, H. C., and Greene, J. A.: The influence of desiccated thyroid gland, thyroxin and inorganic iodine, upon the storage of glycogen in the liver of the albino rat under controlled conditions. *Amer. Jour. Physiology* 105:103 (July) 1935.

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A Brief Résumé of the Newer Conception of Acne

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Detroit, Mich.

This dermatosis has been aptly designated as the plague of youth, as, in the majority of cases, it attacks early adolescents of both sexes. The etiology of this affection is still a moot question. Formerly, we were prone to attribute acne to four salient underlying factors as follows: 1, the sexuomenstrual factor; 2, focal infection; 3, gastrointestinal disturbance with a subheading of faulty diet; 4, allergy.

None of these factors, however, seems to answer the requirements in the vast number of cases observed in practice. We meet with many persons of early adolescent age, or at the onset of puberty, who are perfect specimens of health, wherein the above mentioned factors could be readily eliminated. Thus, the treatment heretofore advocated and resorted to for the removal of the above mentioned causes, proved unsatisfactory. A strict dietary regime, the administration of autogenous or stock vaccines for focal infections causing the disease and the disease *per se,* the use of estrogenic hormones, and the latest fad of plural or multiple vitamin administration, all have proved ineffective in this cutaneous affection.

A new school of thought has developed in recent years, which places great emphasis upon the extrinsic origin of acne, taking the position that *although* the above named etiological factors must be taken into consideration, they are, at best, subsidiary or contributing causes.

During the advent of puberty or adolescence, all the secretory, excretory and incretory glands of the body seem to run riot in a most flagrant manner; to be more specific, the sebaceous glands of the face, scalp, shoulder and back predominate in this process of exuberant growth. These glands furnish an oily secretion called sebum. This is a normal function, the oily secretion serving as a lubricant to the body surface. Early adolescence, however, enhances this function and another picture presents itself to us, viz., the clinical manifestation of acne. This condition is aggravated by the use, misuse and abuse of cosmetics, by girls at an early teen age. These cosmetics form plugs in the sebaceous ducts that lead from the glands to the cutaneous surface, and thwart the natural absorption of ultraviolet emanations from the sun that should flood the skin. Deprived of this salubrious influence of the solar rays, microorganisms readily develop at the site of or underneath the plugs, producing comedones and the various types of acne, such as acne simplex or folliculitis, acne vulgaris, acne varioliformis, etc. Unna, Sabouraud and Gilchrist all recognized this process; in fact, Gilchrist and Unna both isolated a bacillus, which they named the bacillus of acne.

With this concept in mind, our treatment has radically changed. Instead of attacking acne from within, we do so from without, and so resort to various external measures, such as the use of lotions, ointments, mild medicinal soaps, radioactive substances such as uranium, x ray treatments, ultraviolet exposures, vapotherapy, etc. The extraction of the plug or comedone, commonly called a blackhead is an important factor. The comedo spear and extractor, is used for this purpose under aseptic precautions, of course, supplemented by the discontinuance of facial cosmetics.

These last mentioned methods have proved of considerably greater value than any internal medication originally used by dermatologists. Acne ordinarily disappears spontaneously as the person grows older, in most cases at about the age of twenty-five; and thus *tempus curat* has proved to be the best therapeutic agent. Unfortunately, however, young people are rather self-conscious and sensitive about their appearance, particularly girls, and to prevent an inferiority complex from causing injury to their developing minds, the natural process should be assisted by means of the local therapy suggested above, which can be accomplished easily.

Summary

If the early dermatological authorities, particularly Unna, Sabouraud and Gilchrist, were alive today, they would undoubtedly accept the rational treatment of acne by the use of the local therapeutic agents mentioned above, such as lotions, ointments, mild medicinal soaps, radioactive substances, such as uranium, x ray treatment, ultraviolet exposures and vapotherapy.

Bibliography

UNNA: *Dermatology.*
WALKER: *Introduction to Dermatology.*
HAZEN: *Diseases of the Skin.*
MCKENNA: *Diseases of the Skin.*
ANDREWS: *Diseases of the Skin.*
SCHAMBERG: *Diseases of the Skin.*

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The Heart in Experimental Thyrotoxicosis

Ernest D. Nora and Nathan Flaxman (*Jour. Lab. and Clin. Med.,* April 1943) say that opinions vary not only as to the specificity of the possible thyrotoxic cardiac changes, but also as to the probable cause of such alterations in the heart. Some hold that toxicosis is the primary cause; others attribute any cardiac change to an indirect cause, while a third group attributes any possible changes to a previous heart disease, especially a rheumatic myocarditis. The authors state that thyrotoxicosis, experimentally induced, has not been entirely successful in solving the problem of the cardiac lesions in hyperthyroidism. Specific lesions have been produced in various animals by some workers while others have reported that they were unable to demonstrate specific lesions. In an effort to investigate further this important and complex problem, the authors undertook a number of experiments on rabbits. Their findings are summarized as follows:

Experimentally induced thyrotoxicosis in rabbits resulted in the following changes in the heart: parenchymatous and fatty degeneration, cellular invasion, fraying and fragmentation of the heart muscle, and fibrosis. Similar changes, but not as marked, were produced by cardiac overwork without an excess of thyroxin in the circulation. This was produced by cutting the depressor nerves and denuding the carotid sinuses of their investments in order to allow the heart to operate uncontrolled. A heart that is induced to work more rapidly does respond with morbid anatomical changes, but these cardiac alterations are not as marked as those due to the summation of the effect of increased thyroxin on the myocardium and the tachycardia.

Editorials

Socialized Medicine

Several of our august and venerable medical groups are beginning to talk seriously about some of the problems pertaining to socialized medicine but their general attitude has undergone quite a change. There was a time when talk about socialized medicine among a group of physicians, would label one as a Bolshevik or something less printable. There was much shouting about how badly experiments in socialized medicine had worked out in other countries.

We advance no plea for socialized medicine or for unsocialized medicine. We believe the average physician has one of the most thankless and trying tasks of any professional man. We feel that a goodly share of our population is not receiving adequate medical care, and believe this is due, in the main, both to the economic condition of the underprivileged groups and to the economic struggle that confronts the average physician. Furthermore, we feel that anything that can be done to solve these problems is worthy of careful consideration and ultimate action.

We hope our position is clear, but please read carefully what was said by D. L. H. Bauer at the recent meeting of the Medical Society of the State of New York: "The world is changing, much as we regret it. Unless we are alive to this fact, and unless we try to direct these changes, in so far as they affect the practice of medicine, we shall be left at the proverbial hitching-post and instead of leading we shall be led. The medical profession must evolve a plan of its own and work and fight for its adoption." The only point in these remarks that we would take mild exception to is the one regretting a changing world. If the world decides to change for the better and we help in this change as best we can, why should we regret it? But this still remains a minor matter.

There are two points that the medical profession seems to insist on. First, the patient should have complete freedom of choice of physician. Why not? Only nothing is said about the physician having free choice of patients. Secondly, the medical profession should—and wants to—guide the changes that will take place. They do not want to be led or forced into peculiar or impossible situations by governmental or lay agencies. Dr. George W. Cottis further developed the theme by stating that, "Our duty is not to oppose change blindly, but to recognize what is inevitable and use our whole energy and leadership to make sure that, in so far as change involves medical care, it should be changed for the better and not for the worse."

Finally, it was suggested that a planning committee should have wide powers to study all phases of economic matters affecting the profession and the public. Why not? We have seldom heard of an injunction that would prevent anyone from having powers to study, but it is going to take more than study. It is going to take constructive propaganda and finally action.

We believe that physicians in the past have taken too little cognizance of the changing economic situation and have accepted the economic *status quo* as something that would endure forever. They have opposed change, which is unlike the attitude the medical man has towards the scientific aspects of his work, where he welcomes innovations that are improvements over older methods and in curative agents.

The *New York Times* on May 5th had something to say on the matter, and we feel it well to quote the gist of these comments: "We established free schools generations ago without disturbing private schools and colleges. By analogy private offices, cooperatives, pre-payment clinics and hospitals should be able to exist side by side. It is to be hoped that the State Medical Society will approach its task from the viewpoint of public need. Unless this is done we must expect the kind of governmental control that neither the general public nor the physician wants." Pretty strong for the New York *Times, n'est-ce pas?*

The Rockefeller Foundation

A review of the work of the Rockefeller Foundation by Raymond B. Fosdick, its president, is a luminous document, not alone for the facts as presented of the work done, but in the method of presentation.

The work that the Foundation has done and is doing is playing a tremendous part in the war today. While the work has been cut off in most of the European countries, it has been intensified in other countries: in Iceland, in India, in England, and in a small measure in Sweden and Switzerland. New projects in the realm of public health, psychiatry, the biological sciences, and in mathematics are being fostered. The report states that Hitler did much to build up America as the world's great mathematical center by forcing famous European mathematicians to migrate, and the Rockefeller Foundation blandly asserts that they were willing to assist Hitler in the development of America as a great center for mathematics.

We take the liberty of quoting from the report under the heading of the "Return From Violence". It may be premature to take this point of view when the Allies are just getting into the first strides of their final battle for victory, but we feel that the following paragraphs are worth careful consideration:

"But the insistent voice of reason tells us that violence and hate cannot serve as foundation stones with which to build a new world. Our consciences revolt

against our present pattern of thinking; and we look forward to peace, not only because it means the cessation of violence, but because we assume that the end of physical conflict will more or less automatically induce a mood in which hate and the hunger for vengeance will be dissipated.

"If it were all as simple as this assumption would indicate, the future would seem less dark. The difficulty, of course, is that the mood of violence, resulting from war, tends to continue long after the actual fighting has stopped. It continues not only as a way of looking at old enemies but as a philosophy of life and conduct toward others, whether they be nations, races, groups or individuals. The emotional environment of war is carried over into peace, and passion and force tend to become accepted as legitimate weapons in dealing with human problems. Hate is like a chronic disease which does not lend itself to a quick and easy cure; and violence, if too prolonged as an accented technique, can become a deeply set mental habit.

"If, after the victory of the Allied powers, a psychiatrist could be called upon to prescribe for this sick world, he would undoubtedly say that it as necessary to "return from violence" on the mental front as it is to cease physical hostilities. The destructive war of the spirit must be stopped. There must be an armistice for hate. The world must slough off its mood of violence if it expects to have a rational, health future."

Reduction in War Wound Fatalities

We know that in former wars about seventy percent of all deaths from infected wounds were caused by hemolytic streptococci. These microorganisms were carried into the tissues at the time of wounding or they were transmitted from patient to patient in the hospitals, or disseminated by dust.

The remarkable advances in medicine and surgery since the first world war are now paying huge dividends in saving the lives of soldiers wounded in combat. We learn this from a report by the Metropolitan Life Insurance Company. Wounds suffered by fighting men today are likely to be both more numerous and more severe than in previous wars. While it is too early to get detailed figures on war wound fatalities, definite indications of improvement in wound fatality rates are available from scattered sources. Up to December 1942, there was a total of 4,104 wounded in the American Army with a fatality rate of approximately four percent. The gross fatality rate in the American Army in the first World War was 7.7 percent, and in the British Army on the Western front it was 7.6 percent.

Limited experiences in our forces during the present war are the gross rate of 3.8 percent recorded in one of our large medical units at Pearl Harbor in December 1941, and the rate of less than one percent among Navy and Marine casualties in the first three months of fighting in the Solomons last year. All these figures exclude men killed in battle or dying of wounds before medical aid reached them. The mortality from abdominal wounds in previous wars has usually been higher than fifty percent, while in the Solomons fighting the remarkably low figures of less than five percent has been reported for abdominal wounds. The fatality rate from wounds of the chest cavity, which in former wars has frequently exceeded twenty-five percent, was reduced in one British medical unit to about five percent among such casualties evacuated from Dunkirk. Similar accomplishments by the medical services of the Russian Army have been reported.

Wound infections and gas gangrene are relatively infrequent in the present war largely as a result of the routine use of sulfa drugs. Tetanus has been practically eliminated by the routine protection of our men with tetanus toxoid. Where necessary, men have been flown long distances and, in fact, some of those wounded in North Africa were only a few days later being treated in the United States, in hospitals where more adequate surgical and nursing care could be given.

Feet of the Marching Soldier

Despite the mechanization of the armed forces, soldiers still march on their feet, and marching with a sprain, for instance, causes very disagreeable and even intolerable pain despite the relatively small injury to the foot. The abolition of pain by local anesthesia in such cases is a noteworthy improvement in wartime, where every available man is of vital importance. Dr. Leinwand, in *The Military Surgeon,* shows that about two cc. of two percent procaine, without epinephrine, is sufficient to abolish pain in cases of sprain. This treatment permits the patient to walk normally on the injured foot within a few minutes of the operation.

The rate of absorption of this solution is such that analgesia lasts from four to twelve hours. After the injection of enough procaine to abolish tenderness at the point of puncture, other tender areas in the near vicinity are searched for, and the needle is directed toward them. The injection is terminated when no more tender points can be palpated, and if all the sensitive areas are thus anesthetized, the pain of the injury will generally disappear. Four contraindications to treatment are specified: 1, The presence of an open wound at the site of the injury; 2, an infected or potentially infected area at or near the injured ligaments; 3, rupture of a large or medium-sized vessel; 4, idiosyncrasy to procaine. The men, disabled by their injuries, were able to return to their work within fifteen to twenty minutes, and suffered no subsequent disability. As Leinwand says, in a war where it is vital to maintain "as many men at as many guns as many days as possible", this treatment is an active help to the unit.

A condition similar to the trench foot of the last war is the immersion foot, which may result from exposure of the feet in cold sea water for periods of several hours to many days. The first stage is characterized by cold extremities, absence of peripheral arterial pulse, and swelling. In the second or hyperemic stage the skin is bluish red, and blanched when the extremity is elevated. In the third, posthyperemic stage, the skin is of normal temperature but may be subjectively cold and sweaty (Raynaud phenomenon). Treatment is directed at avoidance of further injury to the affected parts. Massage is contraindicated. The body must be kept warm, but the extremities cool, dry, exposed to the air and elevated on pillows. Recovery is prolonged if motor sensory changes persist into the third week. Tingling, pain, swelling, and atrophic changes may be expected as late as two years after the initial insult if the patient is subjected to further exposure.

News Items

Graduate Fortnight at Academy of Medicine.—The Sixteenth Graduate Fortnight of the New York Academy of Medicine will be held October 11-22, 1943. The subject will be "Disorders of the Digestive Tract", and the program will include morning panel discussions, afternoon clinics, evening lectures, scientific exhibits and demonstrations. The registration fee is $5.00 for all except Fellows of the Academy. Programs, when completed will be mailed to Fellows, and to other physicians upon request.

Institute of Living.—The Board of Directors of the Neuropsychiatric Institute of the Hartford Retreat announces that by action of the Connecticut State Legislature the century-old Hartford Retreat has been renamed the Institute of Living. This name has grown out of the program, inaugurated twelve years ago, which emphasized education and re-education of mind and body as a foundation stone in preventive psychiatry, as well as intensive therapy.

Committee to Study Health Insurance.—A committee of sixteen has been appointed to study and report on a comprehensive plan for medical and health insurance for persons of moderate income. The membership of the committee is made up of representatives of the medical profession and organized labor. The medical representatives include: Dr. Willard E. Rappleye, dean of the College of Physicians and Surgeons; Health Commissioner Ernest L. Stebbins; Hospital Commissioner Edward M. Bernecker; David M. Heyman, director of the Institute of Health Research; Dr. George Baehr, of the United States Public Health Service; Dr. J. Stanley Kennedy, president, New York County Medical Society; Dr. Arthur C. Chace, president, Academy of Medicine; Dr. William B. Rawls, chairman of the coordinating committee for the medical societies of the five boroughs, and Dr. David J. Kaliski. Subcommittees will be appointed to study special aspects of the medical and health plan which will function through a panel of physicians set up by a nonprofit membership corporation.

Personal.—Dr. B. R. Kirklin, president of the American College of Radiologists, Chicago, has been appointed x ray consultant in the Office of the Surgeon General of the U. S. Army, Washington, D. C. He was given the rank of colonel.

Dr. Carl Voegtlin, chief of the National Cancer Institute, Bethesda, Md., delivered the fifth Frank Billings Lecture of the Thomas Lewis Gilmer Foundation at a meeting of the Institute of Medicine of Chicago on May 28th. His subject was "Chemistry of the Carcinogenesis and Tumor Growth".

Dr. Arthur C. DeGraff delivered, on Wednesday afternoon, May 26th, the eighth lecture in the refresher course in cardiovascular diseases which is being given under the joint auspices of the New York Academy of Medicine and the Heart Committee of the New York Tuberculosis and Health Association of the New York Heart Association. His subject was "The Management of Cardiac Arrhythymias".

Dr. V. P. Sydenstricker, professor of medicine, University of Georgia School of Medicine, delivered the eighth Harvey lecture at the New York Academy of Medicine, Thursday evening, May 20th. His subject was "Nutrition Under Wartime Conditions".

Dr. Currier McEwen, dean of the New York University College of Medicine, has been granted leave of absence for military duty as a lieutenant colonel in the Medical Corps of the U. S. Army. He will serve as executive officer of the Bellevue Hospital Affiliated Unit, now in training at Fort George G. Meade, Md. During his absence, Dr. Donal Sheehan, professor of anatomy, will act as dean and Dr. Clarence E. de la Chapelle, professor of clinical medicine, will act as assistant dean in the place of Dr. John H. Mulholland, who was granted military leave last October to take charge of the Surgical Service of the Bellevue Unit.

Dr. J. Lewis Amster, New York, was honored by a testimonial dinner given on May 15th by the medical board of Morrisania City Hospital and his many friends to mark his recent elevation to the position of honorary consulting surgeon, and in recognition of his services as president of the medical board and visiting surgeon. The proceeds of the dinner are to be used as an endowment of the J. Lewis Amster Library of the Morrisania Hospital.

Dr. Charles F. Kettering, of the General Motors Corporation, delivered an address on "Looking Forward Through Research" at the two hundred and fifty-fourth meeting of the American Physical Society held recently at the Ohio State University, Columbus.

Brigadier General James Stevens Simmons, A.U.S., director of the Division of Preventive Medicine of the Office of the Surgeon General, U. S. Army, has been appointed lecturer in public health on the staff of the School of Medicine of Yale University.

Dr. Henry F. Helmholz, professor of pediatrics at the Mayo Foundation of the University of Minnesota, received an honorary degree at the ninetieth commencement of the University of Wisconsin on May 29th.

Dr. Stanhope Bayne-Jones, professor of bacteriology and dean of the School of Medicine of Yale University, and Dr. Roger Adams, head of the department of chemistry of the University of Illinois, each received the degree of doctor of science at the ninety-third commencement exercise of the University of Rochester, New York.

The Mayer Award.—Dr. Charles Huggins, professor of surgery at the University of Chicago, is the first winner of the $2,000 Charles L. Mayer award which is to be presented annually by the National Science Fund of the National Academy of Sciences for the greatest contribution to present-day knowledge of factors affecting the growth of animal cells with particular reference to human cancer. Dr. Huggins won the prize for his studies of the human prostate.

Philadelphia Metabolic Association.—"Diabetes Under War Conditions" was the subject discussed at a meeting of the Philadelphia Metabolic Association on Friday, April 9th in the auditorium of the Philadelphia County Medical Society. The subject was discussed from various points of view as follows: Diet and food hints for diabetics; diabetics in relation to the rationing program; diabetics in relation to the civilian defense program; and diabetes in the Army and Navy services. A general discussion followed.

American Neurological Association.—At the sixty-ninth annual meeting of this association, held recently in New York, the following officers were elected: Dr. Edwin A. Zabriskie, of New York, president; Dr. Byron Stookey, of New York, second vice-president, and Dr. Henry A. Riley, of New York, secretary-treasurer.

National Academy of Sciences.—The spring meeting of the National Academy of Sciences, was held in Washington, April 26th and 27th. Dr. Frank B. Jewett, of New York, was reelected president for a further term of four years and Dr. F. E. Wright, of Washington, was reelected home secretary for a further term of four years. Members of the council who were elected for terms of three years were Dr. W. Mansfield Clark, of the Johns Hopkins Medical School, and Dr. Walter R. Miles, of Yale University School of Medicine.

Clinical Society of Reconstruction Hospital.—At a regular meeting of this society, held on May 19th, Dr. Henry H. Ritter presented two cases of fracture-dislocation of the sternum and one of frost-bite of all fingers. Dr. B. Bernard Kaye presented a case of burn of the chest and Dr. David Goldblatt presented a case of foot drop following embolus into the lower extremity. A case of bilateral fracture of the patella was also presented.

Annual Postgraduate Institute in Philadelphia.—The eighth annual Postgraduate Institute of the Philadelphia County Medical Society was held May 11th to 14th, at the Benjamin Franklin Hotel, with Dr. William Bates, president of the Society, presiding. The subject was "Management of Emergencies". The guest speakers included Dr. Hubley R. Owen, Hon. W. Freeland Kendrick, Dr. A. Hamilton Stewart, Dr. Augustus S. Kech, and Dr. Rufus S. Reeves.

Refresher Course in Venereal Disease.—A clinical refresher course in the modern diagnosis and management of venereal disease is being held at the Central Clinic of the Department of Health, Manhattan, under the direction of Dr. Louis Chargin. This course is available to all New York City physicians and it presents an opportunity for them to observe laboratory and clinical diagnostic procedures and treatment methods for syphilis, gonorrhea, chancroid and other venereal diseases. The sessions started on Wednesday, May 12th and will be held on each Wednesday morning through June 30th.

No Rationing of X Ray Films.—The American College of Radiology announces that there will be no rationing of x ray films and that private radiologists may enjoy the same rights as hospitals and clinics in obtaining films. No preferential treatment will be given to hospitals. The American College of Radiologists conducted recently an investigation of a threatened shortage of roentgen films which had developed. They found that there was an abundance of the material required in the manufacture of roentgen films, and while productive facilities are heavily taxed, supplies might be reduced but there was no expectation of an acute shortage.

Health Maintenance in Industrial Plants.—The New York State Department of Labor has issued a special bulletin entitled "Essentials of Health Maintenance in Industrial Plants". The bulletin contains details of medical service in the small plant and medical service in large establishments. There is a comprehensive bibliography with selected references in the field of industrial hygiene on carbon monoxide, dermatitis, dust, fatigue, gases, lead, nutrition, silicosis, volatile solvents, and general industrial hygiene, etc. It consists of sixty-four pages and is well illustrated.

School of Alcohol Studies Established at Yale.—The Laboratory of Applied Physiology of Yale University, under the direction of Dr. Howard W. Haggard, has established a new research unit to be known as the School of Alcohol Studies, according to *Science*. Professor E. M. Jellinek is director of the school. He will conduct an annual summer session in alcohol education designed for the needs of those engaged in activities in which thorough knowledge of the facts about alcohol problems will be of particular usefulness. The first summer session will be held from July 8th to August 16th. A number of fellowships are available. For particulars, address the School of Alcohol Studies, Yale University, New Haven, Conn.

Kenny Treatment Center in New Orleans.—A new service to be known as the Kenny Method Treatment Center has been established in New Orleans for the treatment of acute paralytic poliomyelitis. This service is being operated jointly by the division of crippled children of the Louisiana State Board of Health and the Charity Hospital of New Orleans, and will be considered a special orthopedic-pediatric service treating cases of acute paralytic poliomyelitis under isolated conditions. The management of patients will be carried out by members of the faculties of the Louisiana State University School of Medicine and the Tulane University of Louisiana School of Medicine, and the hospital staff.

Associated Hospital Service Anniversary.—One hundred employees who have been with the Associated Hospital Service of New York for five years or more were honored at a dinner given in New York on Friday, May 7th, the eighth anniversary of the founding of the hospital service plan. Also honored were six members of the Board of Directors who have served at least five years. Louis H. Pink, president, presided. The employees honored represent one sixth of the present personnel. It was decided to form a Five-Year Club, of which they became charter members and to which other employees will be admitted as they attain five years of service. Twenty-one other employees are eligible for the Five-Year Club but could not be present because they are serving with the armed forces.

CANDY BARS EMERGE AS A WARTIME FOOD

FREDERIC DAMRAU and MILTON A. LESSER
New York, N. Y.

The diminishing supplies of meats, vegetables, dairy products and other essential foods available to civilians, in view of the priority requirements of our armed forces and our fighting allies, have brought the attention of physicians and nutritionists everywhere to the problem of adequate caloric intake. Although men and women are asked to work harder than ever before, they find their accustomed energy foods becoming scarcer and scarcer.

Every civilian must sacrifice some of his old habits to help win the war. He must work harder, put in longer hours, produce more, and consume less wastefully the essential foods which are needed by our armed forces. Everyone needs extra energy. From which foods is it to be derived?

Beyond the requirements of the normal diet extra energy should be provided in its purest, most economical and efficient form, namely carbohydrates. It is generally conceded by physiologists and nutritionists that the starches and sugars should supply the bulk of calories required for unusual energy demands. The value of sugar and candy as sources of quick food energy is axiomatic.

A man with a sedentary job maintains equilibrium on a daily intake of 2400 calories. If he eats more, he gains weight. Give that same man a job requiring moderately active work and his caloric intake must be increased to 3000 calories. If his job calls for very active work, such as rapid heavy lifting or pulling with exposure to weather, then he will need 4500 calories per day.

Where will these extra 2100 calories come from? Should he double his previous diet? Certainly not. While a small increase of proteins and fats may be required to replace tissues which have been worn out by the processes of an overactive metabolism, the sciences of physiology and nutrition recognize the carbohydrates, namely the starches and sugars, as the proper sources of calories to meet increased energy demands. However, this increase must be balanced proportionately with thiamine and other constituents of the vitamin B complex.

In this program of supplying energy foods for energy demands, candy bars occupy a most important place and one that contributes materially to the conservation of fighting foods needed by fighting men. Candy bars should be considered by physicians not as a luxury but rather as an important part of the diet of hard working men and women.

It is common experience that active workers need food between meals. Everywhere we see them taking a snack at the cafeteria or quick lunch bar. Without such additions to their regular meals they lose a certain measure of efficiency.

Nutritionists admit the advisability of eating between meals, but at the same time they agree that excessive consumption of proteins is not only expensive and uneconomical but apt to be deleterious. Sweets and candy bars in between meals provide energy at the lowest possible cost in an extremely concentrated form. They also have the great advantage of carrying their own satiation factor so that they are not likely to be eaten to excess. In other words, carbohydrates properly balanced by thiamine may be considered "the high octane food" even though they are in the lowest cost range.

Football coaches and other athletes recognize the value of sugar lumps and candy bars as an aid to better physical performance. The first woman to swim across the English Channel kept up her energy with the help of sugar. Marathon runners have resorted to sugar and candy bars to avoid physical exhaustion and have thereby managed to win their races.

It is common knowledge that soldiers working under field conditions require a certain amount of candy for their energy demands. In fact, chocolate enters into the field ration in this as well as in the previous war. The demand for candy bars at army canteens has reached unprecedented figures, showing the physiological need for quickly available food calories.

The convenience of the candy bar, which is available to supply quick energy when it is needed, is a practical advantage to workers under wartime conditions. The satiation factor helps to limit consumption to the physiological needs and it is seldom that we see adults who eat candy immoderately.

A comparison of the caloric value of candy bars with that of other energy foods is illuminating. As we have shown in a previous article, (1) the typical five cent commercial candy bar weighing two and a quarter ounces or sixty-four grams supplies approximately three hundred calories or one-tenth the daily requirement of a man doing moderately active work.

Transposing the caloric value of the typical candy bar into work units, we find that it yields 126,671 kilogrammeters—equivalent to 917,094 foot-pounds or 27.79 horsepower per minute.

The same weight as the above of eggs or prime ribs of roast beef supplies about one hundred calories, of roasted chicken one hundred and fifteen calories, of halibut steak eighty calories, of boiled potatoes fifty-five calories, and of cooked spinach eight calories. Of course many of these foods supply other nutritive properties which are essential in the normal diet and cannot be replaced by candy.

Contrary to a general impression, candy bars have important food values other than those derived from their contained sugars. A reading of the labels of several candy bars, whereupon the ingredients are declared in the order of their preponderance by weight, demonstrates that many of them have substantial protein and fat values.

The typical five cent candy bar which we tested by standard chemical procedures weighs 64 Gm. and supplies 37.5 Gm. carbohydrate, 14.6 Gm. fat and 1.8 Gm. protein. Hence fifty-two percent of its calories are derived from carbohydrate and forty-eight percent from protein and fat. In boiled white potatoes, for example, ninety-three percent of the calories are derived from starch.

On the generally recognized basis of five hundred Gm. carbohydrates for the daily diet, such a candy bar provides only one-thirteenth of this amount as compared with one-tenth of the total caloric requirement. Hence it is not open to the objection of supplying an excessive proportion of sugar in the diet.

Obviously no single food can be expected to be complete in all nutritive requirements or in any group of the same. Each has a special and individual function in the balanced diet. Nor can any single food be consumed *ad libitum* without deleterious effects. Quite properly The Council on Foods and Nutrition (2) has condemned any disproportionate consumption of sugar in the form of candies and sweetened beverages, since provision must be made in the daily diet for vitamins and minerals as well as calories.

An overconsumption of starches is a contributory factor in the etiology of diabetes mellitus. Excessive consumption of red meats and other foods of high purine content may contribute to gout. Even pure water may be injurious to health when it is taken in amounts beyond the bodily needs.

The value of the candy bar as a supplement to the diet of hard working men and women is its ready yield of quick food energy. Its compact form and availability to workers, on candy stands or in vendor machines, serves a real purpose in eliminating the labor required to provide snacks at cafeterias or quick lunch counters.

During our inspection of the manufacture of the candy bar which we investigated, we were much impressed by the conservation of labor. Everywhere we saw machines and conveyor belts take the place of human hands. We were amazed to note and compute the millions and millions of food calories which could be turned out in a few hours by a handful of employees.

The Office of Defense Transportation has repeatedly urged conservation of freight car space to provide for the heavy demands of wartime priorities. Of all foods available to the public, few supply even a small proportion of the nutritive value of candy bars, as expressed in terms of caloric units.

Many foods spoil unless they are transported in special refrigerator cars. With most fresh foods spoilage is a problem that puts a burden upon transportation facilities. Candy bars do not spoil under ordinary circumstances and large amounts can be transported in a comparatively small space.

A reasonable consumption of candy bars, properly supplemented by proportionate vitamin B_1, may be used as a wholesome substitute for excessive amounts of other energy foods. In other words, civilians can use a smaller amount of essential foods for their nutritional requirements and the calories needed for extra physical effort can very well be supplied in the form of quick energy foods such as candy bars.

The use of candy bars should be encouraged because they provide a compact and convenient form of food energy with great economy of labor, materials and transportation facilities. Proper attention should be given to the necessity for an adequate amount of vitamin B_1.

Here the advice of the physician or nutritionist is necessary. Every addition of carbohydrate to the diet in the form of starch or sugar requires a proportionate increase in the intake of vitamin B_1 or better still of the entire vitamin B complex. This can be calculated in terms of calories. An intake of 0.5 mg. thiamine, that is, 167 U.S.P. units of vitamin B_1, will take care of one thousand calories.

Thiamine or vitamin B_1 has aptly been called the spark necessary to complete oxidation of the carbohydrates. Hence the sugars in candy properly balanced with the correct proportion of thiamine are high octane foods, as it were, available for quick energy. The sugars supply the fuel and the thiamine the spark.

In the absence of a proper intake of thiamine, overconsumption of starches and sugars may lead to minor grades of vitamin B_1 deficiencies. This is particularly true in instances where a large proportion of the caloric intake is in the form of such carbohydrates. The deficiency in vitamin B_1 of many staple American foods was emphasized by Cowgill (3) in 1939. When a moderate amount of starch or sugar is added to the correctly balanced diet to meet increased energy demands in persons doing hard physical work, a condition of athiaminosis seldom eventuates.

Experience has justified the common practice of supplementing the diet with vitamin B complex tablets, capsules or powders. These additions are simple, convenient and inexpensive and protect fully against deficiencies of the vitamins of this group.

The figures published by the Food and Drug Administration (4) and the American Medical Association (5) may be recommended for supplementary use of the vitamin B complex. These amounts are as follows:

For vitamin B_1 (thiamine), 0.25 milligram (83 U.S.P. units) for an infant, 0.5 milligram (167 U.S.P. units) for a child less than six years old, 0.75 milligram (250 U.S.P. units) for a child six or more years old, 1 milligram (333 U.S.P. units) for an adult.

For riboflavin (vitamin B_2, vitamin G) 0.5 milligram for an infant, 2.0 milligrams for an adult.

The above figures represent the minimum daily requirement of thiamine and riboflavin. While optimum nutrition requires a larger intake, it is assumed that a considerable part of this will be derived from the diet, however inadequate. We believe that consideration should be given also to the inclusion of nicotinic acid (niacin) or nicotinamid (niacinamid) in the amount of 10 mg., which is generally considered the minimum adult daily requirement of the antipellagric vitamin.

Since thiamine subnutrition is far more common in this country than has been generally supposed, even in persons who are subsisting on a diet which appears adequate, authorities on nutrition are urging a more general use of vitamin B_1 and B complex supplements.

From the viewpoint of economy of manufacture and transportation, both of which effect a saving of labor and freight space, we would do well to utilize to a greater extent the caloric value of candy bars as part of the wartime diet. Provided due attention is given to the requirements of a balanced diet and an adequate intake of vitamin B complex, we believe that candy bars can be recommended for greater use than at present prevails as a between meal or after meal addition to the wartime diet of hard working men and women. They serve as a quickly available source of food energy and at the same time conserve the supply of other foods which are needed for the rations of our fighting men and their allies.

Summary

The large volume of essential foods required for military purposes necessitates a shift in the dietary habits of the American people. These essential foods can no longer be consumed wastefully by civilians in amounts exceeding their nutritional requirements.

As a compact source of quick food energy for hard working men and women, candy bars can be recommended highly. A typical five cent candy bar provides approximately three hundred calories or one-tenth the daily requirement of a moderately active man.

The candy bar, like any other food, should be considered as a single unit in the balanced diet. Like many other carbohydrate foods it is deficient in thiamine and other constituents of the vitamin B complex. Hence the increasing use of appropriate vitamin supplements should be encouraged.

Of all high caloried foods available under wartime conditions, candy bars are among the most convenient, compact and practical. Their manufacture requires a minimum of labor and their transportation a minimum of freight space.

For these reasons, the recommendation of candy bars in reasonable amounts as a rich source of additional calories, with due regard to other nutritive and vitamin requirements, will not only give our people increased energy but also help to conserve other essential foods needed by our fighting men and their allies.

References

1. Damrau, F., and Lesser, M. A.: The nutritive value of candy bars, their importance in the wartime diet as an energy food. Med. Rec. 156:23, 1943.
2. Council on Foods and Nutrition: Some nutritional aspects of sugar, candy and sweetened carbonated beverages. *J.A.M.A.* 120:763, 1942.
3. Cowgill, C. R.: Need for addition of vitamin B_1 to staple American foods. *J.A.M.A.* 113:2146, 1939.
4. Food and Drug Administration: Title 21—Foods and Drugs. *Federal Register*, November 22, 1941, p. 5925.
5. Council on Pharmacy and Chemistry and Council on Foods and Nutrition: Proper use of vitamins in mixtures. *J.A.M.A.* 119:948, 1942.

247 Park Avenue

The Problem of Fatigue

(*Continued from page* 344)

Dumont shows, for instance, that the staple diet in the African Congo is exceptionally poor in calcium and phosphorus. The potato grown in that part of the world contains only three mg. percent of calcium oxide, as compared with nineteen mg. percent in Brazil and one hundred percent in Europe. Soil studies in the Congo have confirmed this almost complete lack of calcium.

The very opposite conditions are found along the banks of the lower Nile, where the soil contents of calcium and phosphorus is exceptionally high. Now compare the beautiful bodies of the Arabs, their great strength, good teeth and their remarkable endurance, with the poor bodies, diminished strength and small endurance of the Congo negroes. Dumont explains their poor condition as caused by a disturbed mineral metabolism "a form of undernourishment with general asthenia, rapid fatigue, reduced immunity". The various medicaments against tropical diseases have hardly any effect in such demineralized bodies.

According to a study of the United States Department of Agriculture (35) phosphorus deficiency in the soil has been found in Minnesota, Wisconsin, Michigan, Florida, Kansas, Montana, Utah, Texas, Pennsylvania and California. "The deficiency may be localized in certain areas within the State or may become evident only during seasons of drought . . . Animals suffering from a lack of this mineral may soon be lacking in other factors as well—such as calcium, protein, vitamin A, etc. . . ." Calcium deficiency has been established in Florida, Louisiana, Nebraska, Virginia and West Virginia.

The interesting fact about these findings is that deficiencies in certain important minerals cause the development of other deficiencies, such as of vitamins, hormones, ferments, etc. Much work needs still to be done in this field, especially as many studies point to the fact that the available tables regarding the mineral contents of plants constituting our main foods, are still entirely insufficient.

This brief review of the main components of fatigue shows that it is but a symptom indicating a disturbance in the entire metabolism: In the glycogen supply (hypoglycemia); in the oxygen supply (oxygen debt); in decreased oxidation power (not responsive to artificial vitamins); in heat radiation; in the adaptation of an increased blood supply; in the opening of the capillaries (avoiding capillary poison); in the transformation and elimination power of the waste product. All these are but parts of the entire metabolism. Neither one of them nor all of them together reveal the underlying cause. The nucleus of the problem lies in the neutralization of the acid waste products, (lactic acid, amino and fatty acids, carbondioxide, etc.) and their elimination.

The logical therapy resulting from these facts must proceed in the following three directions[1]:

1. The mineral salts of the K group (potassium, phosphorus, calcium, magnesium, etc.), which are able to neutralize the waste products, must be so abundant in the food that the amounts taken in will always be in excess of those used up.

2. The prompt and unimpeded elimination of the waste products of the digestion of the food and the metabolism of the cells.

3. A minimum of fats and proteins in the food intake, so as to reduce both the burden on the oxygen economy and the accumulation of fatty and amino acids.

All these remedies are, however, able only to postpone fatigue, not to prevent it. For fatigue has to occur essentially because most of the organs are not adequately equipped to function without rest. The changes in the mineral content of the cells found in fatigue are, in themselves, only beginning disturbances, "functional and reversible" which with increasing severity are transformed into such permanent changes as we found in inflammation, atrophy, old age and other pathological processes.

References

1. Margeria, Rodolfo: Pavia. cit. *Ber. u. d. ges. Biol.* 112:52, 1939.
2. Boehme, Helmuth, and Guenther, Zaeper: *Zentralbl. d. exper. Med.* 103:479, 1938.
3. Isac, C., and Matthes, K.: Naunyn-Schmiedeberg—*Archiv für experimentelle Pathologie und Pharmakologie.* 189:606, 1938.

[1]See also "Feeding the German Army," by Max Gerson, *New York State Journal of Medicine* 41:14 (July 15) 1941, in which the practical results from the partial application of these principles are shown.

4. ISAC, C., MATTHES, K., and YAMANAKA, T.: Naunyn-Schmiedeberg—*Archiv für experimentelle Pathologie und Pharmakologie.* 189:615, 1938.
5. CHRISTENSEN, E. H., and HANSEN, OVE: *Skandinav. Arch. f. Phys.* 81:172, 1939.
6. ATZLER, EDGAR: *Arbeitsphysiologie.* II. Tl. and Ergebn. Physiologie. 41:164, 1939.
7. (a) GERSON, M.: *Diättherapie der Lungentuberkulose.* Leipzig and Wien, 1934.
(b) GERSON, M.: Potassium diet rich in fluids as treatment in cardiorenal insufficiency. *München. med. Wchnschr.* No. 15, 1935.
8. CHRISTENSEN, E. H., and HANSEN, OVE: *Skandinav. Arch. f. Phys.* 81:152, 1939.
9. BRUMAN, F.: *Deutsch. Arch. f. klin. Med.* 176:589, 1934.
10. WINKLER: *Monatschr. f. Geburtsh. u. Gynäk.* 100:223, 1935.
11. (a) GERARD: *Compt. rend. Acad. d. sc.* 154:839, 1912.
(b) WIEBEL, HEINRICH: Georg Thieme, Leipzig, 1941.
12. WAGENER, HEINZ: Calcium and Potassium—Spiegel des Blutserums unter d. Einfluss von Rö-Strahlen n. verschiedener Fütterung bei Kaninchen. Diss. 1938, Muenster.
13. MURRAY, P. D. F.: *Proc. Roy. Soc. Med.* 125:478, 1938.
14. HESS, W. R.: *Schweiz. Arch. f. Neurol. u. Psychiat.* 1924.
15. TATYAEVA, M. B.: cit. *Ber. u. d. ges. Biol.* 113:107, 1939.
16. FENN, W. O., COBB, MANERY, and BLOOR: *Am. Jour. Physiol.* 121:595, 1938.
17. DENNIS, JOSEPH, and MOORE, ROBERT M.: *Am. Jour. Physiol.* 123:443, 1938.
18. (a) MARENZI, A. D., and FUSTINONI, F.: *Compt. rend. Soc. de biol.* 129:854, 1938.
(b) GERSON, M.: *Diättherapie der Lungentuberkulose,* page 299.
19. (a) KAUNITZ: *Ergebn. inn. Med.* 51:218, 1936.
(b) KAUNITZ and SCHOBER: *Ztschr. f. klin. Med.* 131: 219, 1937.
20. FENN, W. O.: *Symposia on Quantitative Biology,* Cold Springs, N. Y. 4:252, 1936.
21. KELLER, RUDOLF: *Die Elektrischen Gruppen in Biologie and Medizin.* Sperber Verlag, Zurich.
22. EPPINGER, HANS: *Ztschr. f. klin. Med.* 133:1, 1937.
23. FENN, W. O., and GÖTSCH, M.: *Jour. Biol. Chem.* 120: 46, 1937.
24. SALIT, PETER W.: *Biochem. Ztschr.* 301:253, 1939.
25. LOEB, JACQUES: *Jour. Biol. Chem.* 31:343, 1918.
26. SZENT-GYÖRGI: *Deutsch. med. Wchnschr.* 1325, 1936.
27. KELLER, RUDOLF: *Der Elektrische Faktor der Nierenarbeit.* Verlag Maehrisch-Ostrau. Julius Kittel, 1935.
28. KELLER, RUDOLF: Der Nierenrinde als Speicher. *Biochem. Ztschr.* 268:336, 1934.
29. FUERTH, REINHOLD: *Kolloid-Ztschr.* 63:215, 1933.
30. WAELSCH, HEINRICH: *Kolloid-Ztschr.* 68:342, 1934.
31. SCHLENK and BERGMANN: *Ausführliches Lehrbuch der organischen Chemie* Vol. 1, p. 755, 1932.
32. WEIZMANN, C.: *Jour. Am. Chem. Soc.* 61:2950, 1939.
33. SINGER, EDWARD: *Am. Jour. Surg.* 170:43, 1939.
34. DUMONT, ROBERT: *Arch. f. Schiffs u. Tropen-Hyg.* 42: 412, 1938.
35. *Yearbook of Agriculture,* p. 441, 1939.

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Book Reviews

Psychological Care of Children

Psychologic Care During Infancy and Childhood. By RUTH MORRIS BAKWIN, B.A., M.A., M.D., and HARRY BAKWIN, M.D. New York: D. Appleton-Century Company, 1942.

This book is primarily designed to interest the physician in the promotion of optimal psychological health in the child. The opportunity to do this belongs uniquely to the physician who sees the child early in life, who observes the parental attitudes and the home environment and who has the training and prestige to administer such knowledge. Pediatric care, which fails to take into account the emotional, mental and motor attributes, is necessarily incomplete. In this task nurses and social workers can give valuable assistance and it is our hope that this book will prove useful to these groups. With personality defects, as with organic disease, the condition once established is difficult, often impossible, to eradicate. But in this field, even to a greater extent than where structural defects are threatened, much can be done by prevention. The aim of proper psychological care is to create an environment which will allow the innate potentialities of the child optimal opportunity for development and growth. Its purpose is not to coerce the child into preconceived patterns of thinking, acting and feeling. It is no more the intent of psychological guidance to make uniform individuals than it is for nutritional care to make children of the same height and weight.

Indigestion

Indigestion. Its Diagnosis and Management. By MARTIN E. REHFUSS, M.D., professor of clinical medicine, and Sutherland M. Prevost, lecturer in therapeutics, Jefferson Medical College, Philadelphia. Illustrated. Philadelphia and London: W. B. Saunders Company, 1943. Pp. 556. Price $7.00.

In anticipation of an alarming increase in digestive disorders during this world crisis, the author presents for both civilian and military use a practical treatise on gastroenterology from the viewpoint of indigestion. The newer knowledge of nutrition has modified the subject to such an extent that it is also included in the text. After a review of recent advances in internal medicine the subject of indigestion is considered from various viewpoints, including history, physical and x ray examinations, diagnosis, gastrophotography, and duodenal analysis. Indigestion due to special causes such as nervousness, allergy, infection, gastric dysfunction, ulcer formation, malignancy, biliary disease, hepatic disorders, cardiovascular disease and even indigestion of old age is evaluated. Special chapters are devoted to rare forms of digestive disorders encountered under unusual circumstances. The book is not only an invaluable summary of the current concepts of the management of indigestion but a revelation of a distinguished gastroenterologist's lifelong experience.

Nose, Throat and Ear Disorders

Diseases of the Nose, Throat and Ear. Medical and Surgical. By WILLIAM LINCOLN BALLENGER, M.D., F.A.C.S., late professor and head of the department of otology, rhinology and laryngology, School of Medicine, University of Illinois, Chicago, and HOWARD CHARLES BALLENGER, M.D., F.A.C.S., associate professor of otolaryngology, Northwestern University School of Medicine, Chicago. Eighth edition, thoroughly revised. Illustrated with 604 engravings and 27 plates. Philadelphia: Lea & Febiger, 1943. Pp. 975. Price $12.00.

The late Dr. Ballenger was very fortunate in having a relative of the same name to carry on the work so well begun many years ago. The first edition of this work was a model of clarity and exposition, for Dr. Ballenger, whom this reviewer had the pleasure of knowing in Vienna, was a born student and teacher. He had great capacity for making difficult things simple. Any book which goes through eight editions must have in it both milk and meat.

In this revision there has been some rearrangement of material, partial rewriting, and expansion of certain chapters. Where the text has become obsolete or repetitious it has been eliminated or revamped. New photo-

micrographs are credited to Dr. Leroy Schall of the Massachusetts Eye and Ear Infirmary. Other photomicrographs covering a wide range of material have been made and classified by Dr. John Ballenger and Dr. King Lewis. The former has worked over the data on paralyses and neuroses of the larynx. The relatively new operations on the arytenoids for bilateral recurrent nerve paralysis are described—that of Dr. Brian T. King and that of Dr. Joseph D. Kelly with the varying techniques used by each. Lempert's endaural approach to the mastoid in doing a "radical" is described, and also his fenestration procedure for the relief of otosclerosis. Part V is devoted to instrumentation of the lower airways and is written by Dr. Chevalier L. Jackson and Dr. Gabriel Tucker. It is an epitomized presentation of the work of the "Philadelphia School" which for years has been headed by the Jacksons, and is, therefore, authoritative. A brief chapter on gastroscopy by the younger Jackson ends the book.

Blood Grouping

Blood Grouping Technic. A manual for clinicians, serologists, anthropologists, and students of legal and military medicine. By FRITZ SCHIFF, M.D., late chief of the department of bacteriology, Beth Israel Hospital, New York, N. Y., and WILLIAM C. BOYD, Ph.D., associate professor of biochemistry, Boston University School of Medicine. With a foreword by KARL LANDSTEINER, Rockefeller Institute for Medical Research. New York: Interscience Publishers, Inc., 1942. Pp. 248. Price $5.00.

In the present book an attempt is made to give clear and concise directions for carrying out blood grouping tests, not only as a preliminary to transfusion, but also in connection with cases of disputed parentage and other forensic applications, and in anthropological studies. Indirect as well as direct methods are considered. To aid the beginner in understanding the principles underlying the procedures, the theoretical bases of blood grouping is presented. In connection with transfusion a number of points, some of particular interest at the present time, are taken up which bear somewhat less directly on the subject, such as the use of preserved blood, blood substitutes, and transfusion accidents. The donor problem is discussed from several angles.

Brain Injuries in War

After-effects of Brain Injuries in War: Their Evaluation and Treatment. By KURT GOLDSTEIN, M.D., clinical professor of neurology, Tufts Medical School, Boston. Foreword by D. DENNY-BROWN, M.D., professor of neurology, Harvard Medical School, Boston. New York: Grune and Stratton, 1942. Pp. 244, with 49 illustrations. Price $4.00.

Dr. Goldstein sets out clearly the experience gained in rehabilitation after head injury in the last world war. His methods have stood the test of time, and with little adaptation have again been found the most successful approach to the problem. His book provides a survey of the subject which is unique and eminently practical. It is an excellent starting point for the many—surgeon, physician, neurologist, psychiatrist, and general practitioner alike—who will find themselves expected to assess or treat such cases at one or another stage.

Apart from these considerations, this book is remarkable as a study in the application of practical psychological methods in the medical clinic, a subject which is attracting increasing attention with the realization that it is essential to the complete understanding of the effects of many types of "organic" disease or injury. In this, Dr. Goldstein displays his especial genius.

Critique

How Much Protein People—even doctors—forget that good protein is good protein, no matter whence derived. The protein of fowl and chicken is quite as good as the protein of red meat; even cashew nut protein is practically as good biologically as meat protein, i.e., it contains a full quota of essential amino acids and is highly digestible. Lusk in the fourth edition of his *Science of Nutrition* wrote: "Chittenden and Lusk crossed the English channel together on March 20, 1918. Both had been taking for several weeks the greatly restricted British civilian diet of the time. The meat equivalent of four small chops a week had not been exceeded. On the naval transport 'military rations' were allowed and Lusk partook of a large slice of English cold roast beef, to his delight and satisfaction. This sensation he attributed to the replenishment of the "improvement quota' of his protein stores, while Chittenden (the small-protein-intake man) inclined to attribute the result to the appetite-creating stimulus action of the sea air. Both opinions are proper themes for psychoanalysis. Perhaps roast beef for Sunday dinner fills a real need." There is no strongly substantiated argument why men who live in cool climates should not follow the usual custom of ingesting one hundred grams of protein, more or less, appetite dictating, per day, said Lusk. But less may be as good as more. Some studies indicate that many get along quite well with fifty grams of protein a day. Nothing indicates that either mental or physical workers must stoke up on large quantities of red meat. We probably do not need half so much meat protein as some of us think. Certainly there is nothing about the present rationing system that menaces sound nutrition.

Ultraviolet in the Home Have you a little U V ray in your house? Here are some interesting remarks addressed by G. G. Blake to the meeting of the Royal Society of Arts and printed in the December 22, 1928, *British Medical Journal* (pg. 1151): "Medical men and women are not inclined to dismiss the dangers of ultraviolet therapy in light-hearted fashion. Perhaps, as individuals with a highly developed sense of responsibility, they are unduly timid; but one may recall in this connection an aphorism of Mr. Bertrand Russell's to the effect that when on any subject all experts are agreed, the opposite opinion cannot be held to be certain. Anyone who said in public that every household ought to keep a stock of arsenic or strychnine for self-administration by the light of common sense would not be taken seriously, except perhaps by the police. But a manufacturer of arc lamps, or a lecturer in John Street, Adelphi, can give analogous advice in relation to actinotherapy without protest except in a medical journal. There may be something to be said in favor of trusting certain highly intelligent persons to administer ultraviolet light to themselves under medical directions; we may even grant that others, so robust as not to need this treatment at all, may indulge in self-radiation without coming to much harm; but we cannot too strongly condemn the suggestion that arc lamps may be installed in every household and used without appreciable risk. THE CRITIC

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Medicolegal Notes

Failure to Prove Relation Between Alleged Bang's Disease in Cow and Claimant's Undulant Fever

In a workmen's compensation proceeding it appeared that the claimant from the employer's insurance carrier, a skinner of animals in a meat packing plant, cut his finger while skinning a dead cow and several days later became violently ill with undulant fever, which, the medical evidence showed, may be contracted by humans from cattle suffering from Bang's disease. Although the germs can find their way through the skin where there is no break in the skin, a person is more likely to contract the disease through an open wound that in any other manner. Humans apparently may also contract undulant fever from hogs or goats suffering from diseases similar to Bang's disease, although there is a difference in the germs in the three kinds of animals.

Plaintiff was unable to work for several weeks after cutting his finger, but returned to work in about two months, working four or five weeks, when he was laid off. Shortly afterwards, he filed his claim with the Industrial Accident Board.

On a second appeal of the case by the insurance carrier, the Texas Court of Civil Appeals, Federal Underwriters Exchange vs. Hightower, 161 S. W. 2d 338, reversed judgment in favor of the claimant and rendered judgment in favor of the insurance carrier. After lengthy consideration and careful review of the evidence brought before it upon this second appeal, the appellate court held that there was no evidence of probative force showing that plaintiff contracted undulant fever through the cut in his finger while skinning the dead cow in question. The fatal defect in plaintiff's case the court held to be the lack of any evidence of probative force showing that the cow had Bang's disease. This would have to be established by positive, not merely circumstantial evidence in order to lay the proper predicate for an inference that the disease was communicated to plaintiff from that particular cow.

Proof of Permanence of Disability

In an action for total and permanent disability benefits under a group policy, the question was held to be whether after the onset of the disease, tuberculosis, the plaintiff's condition of total disability as a result thereof, which was admitted, would more probably than not prove to be permanent. The court found no evidence that it would and gave judgment for defendant.

The testimony of a medical witness and an x ray specialist was held to indicate that at no time was the plaintiff's sickness considered severe enough to warrant a prognosis of its permanence.

The plaintiff's offer to prove his own understanding of the meaning of the terms used in the certificate was held to have been properly rejected. "The test of the meaning of those words 'totally and permanently disabled' is not what the insurer intended them to mean nor yet what the insured thought they meant. It is what a reasonable person in the position of the insured would have considered their meaning to be." Langelier vs. Metropolitan Life Ins. Co., New Hampshire Supreme Court, 17 A. 2d 92.

Laboratory Card as Evidence

The physician of the plaintiff in a personal injury action testified that blood tests failed to show that plaintiff had syphilis and that the physician had never treated him for syphilis. After the trial and judgment for plaintiff, the laboratory card of the laboratory to which the physician sent the blood for test showed "four plus". The evidence of some of the defendant's medical experts at the trial had been that syphilis caused plaintiff's disability. On appeal from judgment for plaintiff, the West Virginia Supreme Court of Appeals held, Rexrode vs. Monongahela West Penn Public Service Co., 10 S.E. 2d 584, that the defendant was entitled to a new trial on the ground of newly discovered evidence.

Compensation Medical Examinations

Under a workmen's compensation act authorizing the directors to the Industrial Board to appoint a disinterested physician to make any necessary medical examination of the employee, the Georgia Court of Appeals holds, Ingram vs. Liberty Mut. Ins. Co., 62 Ga. App. 789, 10 S. E. 2d 99, a director of the board is invested with the discretion of making or refusing such appointment, in the exercise of which he will not be controlled by the courts, unless there has been a manifest abuse of discretion.

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**Article in the Southern Surgeon, May, 1941.*

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New Publications Received

(We publish full lists of books received, but acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

SURGICAL PHYSIOLOGY. By JOSEPH NASH, assistant professor of clinical surgery, New York University College of Medicine; associate visiting surgeon, Bellevue Hospital, New York City; First Lieutenant, Medical Corps, U. S. Army; assistant chief of the surgical service, Lovell General Hospital, Fort Devens, Mass. Springfield, Ill., and Baltimore, Md.: Charles C. Thomas, 1942. Pp. 496. Price $6.00.

A TEXTBOOK OF CLINICAL NEUROLOGY. With an Introduction to the History of Neurology. By ISRAEL S. WECHSLER, M.D., clinical professor of neurology, Columbia University, New York; neurologist, Mount Sinai Hospital; consulting neurologist, Montefiore and Rockland State Hospitals, New York. Fifth edition, revised. With 162 illustrations. Philadelphia and London: W. B. Saunders Company, 1943. Pp. 840. Price $7.50.

CREATINE AND CREATININE METABOLISM. By HOWARD H. BEARD, Ph.D., professor and director of the department of biochemistry, School of Medicine, Louisiana State University, New Orleans, La. Brooklyn, New York: The Chemical Publishing Co., Inc., 1943. Pp. 376. Price $4.00.

THE 1942 YEAR BOOK OF PEDIATRICS. Edited by ISAAC A. ABT, D.Sc., M.D., professor of pediatrics, Northwestern University Medical School; attending physician, Passavant Hospital; consulting physician, Children's Memorial Hospital and St. Luke's Hospital, Chicago; with the collaboration of ARTHUR F. ABT, B.S., M.D., associate professor of pediatrics, Northwestern University Medical School; associate attending pediatrician, Michael Reese Hospital; attending pediatrician, Chicago Maternity Center; attending physician, Spaulding School for Crippled Children and La Rabida Jackson Park Sanatorium, Chicago. Chicago, Ill.: The Year Book Publishers, Inc., 1943 Pp. 512. Price $3.00.

DARK LEGEND. A Study in Murder. By FREDERIC WERTHAM, senior psychiatrist, Department of Hospitals, New York City, and director, Mental Hygiene Clinic, Queens General Hospital. New York: Duell, Sloan and Pearce, 1941. Pp. 270. Price $2.75.

FLYING HEALTH. By M. MARTYN KAFKA. With forewords by Colonel E. C. GREENE, (Ret.), chief flight surgeon, American Airlines Corporation and R. S. DAMON, president, Republic Aviation Corporation. Harrisburg, Pa.: Military Service Publishing Company, 1942. Pp. 248. Price $2.00.

BURNS, SHOCK, WOUND HEALING AND VASCULAR INJURIES. Prepared under the auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Illustrated. Philadelphia and London: W. B. Saunders Company, 1943. Pp. 272. Price $2.50.

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY. A complete dictionary of the terms used in medicine, surgery, dentistry, pharmacy, chemistry, nursing, veterinary science, biology, medical biography, etc., with the pronunciation, derivation, and definition. By W. A. DORLAND, A.M., M.D., F.A.C.S., Lieutenant Colonel, M.R.C., U. S. Army; member of the Committee on Nomenclature and classification of diseases of the American Medical Association; with the collaboration of E. C. L. MILLER, M.D., Medical College of Virginia. Nineteenth edition, revised and enlarged with 914 illustrations, including 269 portraits. Philadelphia and London: W. B. Saunders Company, 1942. Pp. 1647. Prices: Plain, $7.00; thumb-indexed, $7.50.

DISEASE OF THE BREAST. Diagnosis, pathology, treatment. By CHARLES F. GESCHICKTER, M.A., M.D., Lieutenant Commander, Medical Corps, U.S.N.R.; director of the Francis P. Garvan Cancer Research Laboratory; pathologist, St. Agnes Hospital, Baltimore. With a special section on treatment, in collaboration with MURRAY M. COPELAND, A.B., M.D., F.A.C.S., instructor in surgery, Johns Hopkins Medical School; visiting surgeon and assistant oncologist, University Hospital, University of Maryland Medical School; visiting oncologist, Baltimore City Hospitals. With 593 illustrations. Philadelphia, London, and Montreal: J. B. Lippincott Company, 1943. Pp. 829. Price $10.00.

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stands first on the list of palliatives useful in combating nervous disturbances of the menopause.

POTENT

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NON-HABITUATING

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CATAMENIAL ABSENTEEISM

A problem that looks to the profession for a solution . . .

THE absence of so many women two or three days each month from critical war work, presents an urgent medical challenge. Such "catamenial absenteeism" looms large on the liability side of the victory ledger.

Some of these cases present stubborn paramenic problems that may require hormonal, emmenagogic, analgesic, even surgical treatment. In a great many instances, however, an improvement in menstrual hygiene may be sufficient—to relieve the physical distress and emotional uncertainty caused by vulval irritation from perineal pads, or fear of olfactory offense, or conspicuous bulging under slacks or coveralls.

Women in all walks of life—in the theatre, in sports, business, or social life—have long found that Tampax intravaginal tampons answer the requirement of improved menstrual hygiene as an aid to uninterrupted activity. Tampax can be used so easily and safely (with three sizes to choose from, to suit personal daily needs). It's free from the prospect of internal or external irritation . . . cannot cause noticeable bulkiness . . . and does not expose the flux to odorous decomposition.

Only Tampax, however, provides the *flat expansion* from a compressed size, that assures complete comfort in situ, after insertion without orificial stress. Only Tampax is *cross-fibre stitched* to prevent disintegration, so that dainty removal may be effected without probing.

Indeed, the adoption of Tampax as a hygienic habit can give a sense of security, freedom, and poise, that may enable many women to stay on the job where they are so vitally needed. Send for samples.

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Schering Markets Priodax

Priodax, a new type of preparation in tablet form for x ray visualization of the gallbladder, is being distributed by Schering Corporation, Bloomfield, N. J. Research reports show clearly certain differences between Priodax and the several dyes in powder form now in use. As a tablet, Priodax can be swallowed whole, thus eliminating the unpleasant symptoms associated with powders. The patient seldom shows any reaction and nausea is infrequent. Because Priodax contains no phenolphthalein, severe diarrhea is rare. Vomiting, which often follows the use of the older preparations, is said to occur in less than three percent of the cases in which Priodax is used.

Chemically, Priodax is beta-(4-hydroxy-3, 5-diiodophenyl)-alpha-phenyl-propionic acid containing 51.5 percent of iodine firmly bound in a stable organic molecule. After being absorbed from the enteric canal, the iodine molecule passes through the liver and is excreted into the gallbladder, providing an excellent contrast medium for diagnostic x ray visualization. Because Priodax presents a concentration of iodine which is better tolerated by the patient, physicians have found that a single dose will almost always result in clear pictures.

For the average adult, the dose is six tablets (three grams). This amount is generally adequate, even with considerable variations in the weight of the patient. If the dose is to be adjusted to body weight, one tablet may be allowed for each twenty-five pounds. There is no contraindication, however, to giving a double dose (six tablets at one time and six tablets several hours later, or six tablets on one day and six tablets the next), if this is desired. This has rarely been found necessary.

The tablets may be swallowed whole with sips of liquid, such as water, fruit juice, or skim milk, either in immediate succession or at intervals as determined by the physician. This method of administration is generally found to be agreeable and convenient, and it assures that the entire dose is taken. The tablets should not be chewed.

Priodax Tablets are supplied in cellophane-protected envelopes of six tablets, each containing 0.5 gram (7.7 grains) of beta-(4-hydroxy-3, 5-diiodophenyl)-alpha-phenyl-propionic acid. The tablets are supplied in boxes of one, five and twenty-five envelopes.

Searle Introduces New Antispasmodic

Pavatrine—a safe, potent, non-narcotic antispasmodic for use in dysmenorrhea and gastrointestinal spasticities—is being introduced to the medical profession by G. D. Searle and Co.

Pavatrine has a dual antispasmodic action—both neurotropic and musculotropic. It has the ability to abolish uterine contractions and relax spasm of the stomach, small intestine, colon and urinary bladder. To determine the human tolerance for Pavatrine, it was administered in amounts up to 23 grains daily with complete freedom from untoward reactions. The usual adult dose is from five to six tablets per day.

Pavatrine is supplied in tablets (2 grains) in bottles of 20, 100 and 1000.

Through The Menstrual Years of Life-

THE frequency with which the menstrual life of so many women is marred by functional aberrations that pass the borderline of physiologic limits, emphasizes the importance of an effective tonic and regulator in the practicing physician's armamentarium.

In Ergoapiol (Smith), the action of *all* the alkaloids of ergot (prepared by hydro-alcoholic extraction) is synergetically enhanced by the presence of apiol, oil of savin, and aloin. Its sustained tonic action on the uterus provides welcome relief by helping to induce local hyperemia, stimulate smooth, rhythmic uterine contractions, and serve as a potent hemostatic agent to control excessive bleeding.

May we send you a copy of the comprehensive booklet "The Symptomatic Treatment of Menstrual Irregularities."

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In ethical pkgs. of 20 cap.

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Hemorrhoids rank comparatively high among the causes of lost "man hours." Today, more than ever, this should be a matter of concern to physicians.

Whenever non-surgical treatment is indicated, Anusol may be used with the knowledge that it will afford the kind of relief likely to keep the patient on his job. By their emollient properties Anusol Suppositories reduce inflammation, alleviate pain and check the bleeding. They contain no narcotic or anesthetic to give the patient a false sense of security.

We suggest that you give Anusol a trial in one of your ambulant cases; we shall be glad to send you a supply for that purpose.

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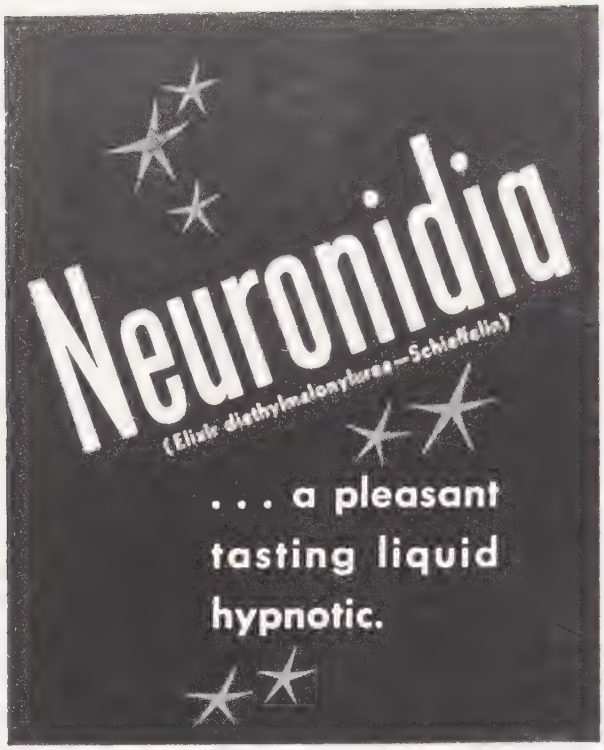

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On awakening the following morning the patient is fully refreshed, both in mind and body.

Hypnotic dose: One dessertspoonful upon retiring.

Sedative dose: One teaspoonful two or three times daily.

Literature and sample on request.

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Pharmaceutical and Research Laboratories

Dr. Tainter Becomes Research Director of Winthrop Chemical Company

Maurice L. Tainter, M.D., professor of pharmacology, Stanford University, and also professor of pharmacology and head of the division of physiological sciences, College of Physicians and Surgeons, San Francisco, Cal., has been named research director of the Winthrop Chemical Company, Inc., according to an announcement by Dr. Theodore G. Klumpp, president. Dr. Tainter will make his headquarters at the company's plant and laboratories in Rensselaer, N. Y.

In addition to his university associations, Dr. Tainter has been serving as a consultant on chemical warfare to the San Francisco War Council, and also as State gas consultant for the California State Council on Defense. In these two capacities, Dr. Tainter has been actively interested in the organization side of chemical warfare defense.

A native of Iowa, Dr. Tainter first attended the University of Iowa, later obtaining his A.B. degree from Stanford, where he subsequently also earned his A.M. and M.D. degrees. He became professor of pharmacology at Stanford in 1935, a year after he had assumed the same chair at the College of Physicians and Surgeons, in San Francisco. Previously he had served successively as assistant in pharmacology, instructor, and associate professor at Stanford.

Dr. Tainter is the author of many scientific papers, and is the editor of the *Stanford Medical Bulletin,* and a member of the editorial board of *California and Western Medicine.* From 1926 to 1927 he was a Fellow of the National Research Council, and spent part of 1930 as a volunteer worker for the Pharmacological Institute, Pharmaceutical Society of Great Britain, in London. Dr. Tainter is a Fellow of the American Society for the Advancement of Science, a member of the American Society of Pharmacology and Experimental Therapeutics, and many other important societies and scientific organizations.

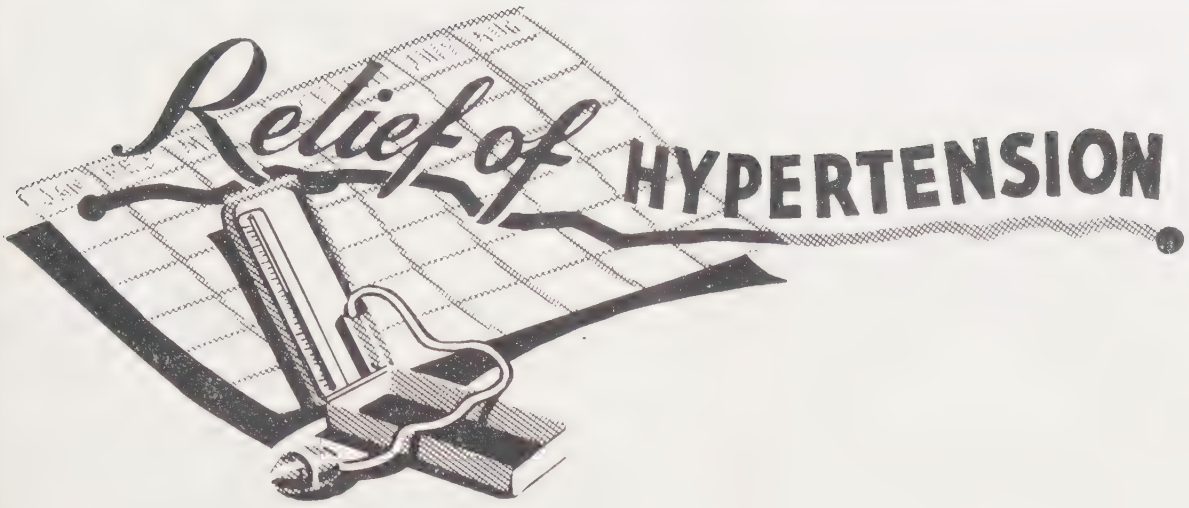
Hormone Dosage at a Glance

Schering Corporation is currently issuing a series of six by nine inch charts enabling one to tell at a glance the dosage of hormones required for various gynecological and endocrine disturbances. The first of these charts will deal with dysmenorrhea. At regular intervals, thereafter, charts will be issued on other subjects, such at the male climacteric and functional uterine bleeding. These charts will aid in clarifying the maze of seemingly confused terminologies and dosages for endocrine disturbances, and should prove useful to practicing physicians.

Physicians may obtain copies of these charts by writing to the Medical Research Division, Schering Corporation, Bloomfield, N. J.

Mr. Hofmann Joins Staff of Smaller War Plants Corporation

Mr. P. B. Hofmann, president of Ortho Products, Inc., of Linden, N. J., has been granted a temporary leave of absence to serve as deputy director of the Field Service of Smaller War Plants Corporation, Washington, D. C. Mr. Hofmann will assist in organizing and servicing the Regional and District Offices throughout the country. Mr. Hofmann played a major rôle in organizing and establishing Ortho Products.



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Clinical studies have shown that this effective hypotensive produces a smooth, gradual but sustained lowering of blood pressure. Prompt in its beneficial action, HEPVISC also maintains its hypotensive effect during the period of its use.

In addition, in over 80% of cases, HEPVISC relieves the distressing subjective symptoms of headache, dizziness and tinnitus. That is why HEPVISC is a favorite with both physician and patient.

HEPVISC Tablets each contain a synergistic combination of 20 mg. Viscum album, 60 mg. desiccated hepatic substance and 60 mg. insulin-free pancreatic substance.

The average dose is 1 to 2 HEPVISC Tablets three times daily before meals, in courses lasting two to three weeks with an interval of one week between courses.

Available in bottles of 50, 500 and 1000 tablets.

Liberal samples to physicians on request.

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FOR EFFECTIVE RELIEF OF HYPERTENSION

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for special dietaries in treatment of:

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Thousands of Doctors Prescribe
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THERAPEUTIC EFFECT:—Elixir Bromaurate inhibits the coughing center, relieves the spasmodic attacks and cuts short the period of the illness.

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In four-ounce original bottles

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GOLD PHARMACAL CO., New York

Tenth Anniversary of the Merck Institute

The tenth anniversary of the opening of the Merck Institute for Therapeutic Research was celebrated on April 26th, with suitable ceremonies at the Institute in Rahway, New Jersey, and a dinner at the Essex House in Newark. George W. Merck, president of Merck & Company, Inc., presided at the dinner and introduced the speakers each of whom emphasized the importance of continuous research in the fields of chemotherapy and nutrition during wartime as well as to meet the problems of postwar rehabilitation. Among the speakers were Dr. William H. Sebrell, chief of the Division of Chemotherapy of the National Institute of Health and assistant director of nutrition for the Defense, Health, and Welfare Services in Washington; Dr. Francis G. Blake dean of the Yale Medical School and chairman of the Subcommittee on Infectious Diseases of the National Research Council; and Dr. Russell M. Wilder, professor of medicine, Mayo Clinic, Rochester, Minn. Messages of congratulation were received from Sir Henry Dale, president of the Royal Society, London, and Dr. Alfred N. Richards, vice-president in charge of medical affairs of the University of Pennsylvania Medical School and chairman of the Committee on Medical Research of the Office of Scientific Research and Development, Washington.

Dr. Hans Molitor, director of The Merck Institute, in his report to the trustees, pointed out that since the outbreak of the war, only problems of immediate importance to the war effort were permitted to remain on the Institute's research program. Notable among these are penicillin and new antimalarial products. Dr. Molitor, who is a member of the Subcommittee on Malaria of the National Research Council, emphasized the urgent need for substitutes for quinine, which is no longer available, and research along these lines is actively pursued in the Institute.

He stated further that the conduct of the war in tropical regions makes it necessary to learn more about the influence which climatic conditions may exert on the use of certain drugs, as well as on the susceptibility to toxic effects, nutritional requirements, etc.

Dr. Royal Lee Receives an Honorary Degree

Royal Lee, D.D.S., president of Vitamin Products Company, of Milwaukee, Wis., received an honorary degree at the forty-third commencement of Staley College, Brookline, Mass., on Tuesday, May 11th. The ceremonies were held in Boston.

The doctorate degree was conferred on Dr. Lee, according to President Delbert M. Staley of the College, "in recognition of the scientific and educational work in the field of human nutritional research carried on by you over a period of many years."

Dr. Lee, a native of Edmund, Wisconsin, is the founder of the Lee Foundation for Nutritional Research and president of the Lee Engineering and Mfg. Company of Milwaukee. While a student at the Marquette University School of Dentistry, Dr. Lee arrived at the conclusion that vitamin deficiency was a major cause of tooth decay. Carrying this subject into full-time research, he has developed a number of methods of extracting vitamins from foods.

Dr. Lee is also a Fellow of the American Association for the Advancement of Science.

HOW SAL HEPATICA INCREASES LIQUID BULK

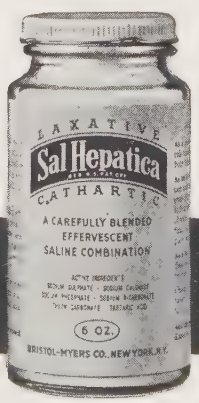
THE REPUTATION of Sal Hepatica as a mild yet thoroughly effective intestinal cleanser seems to grow brighter with passing time. It has long been known that Sal Hepatica flushes the intestines and initiates peristalsis through creation of temporarily unabsorbable *liquid bulk* in the bowel. New laboratory studies simply corroborate the literature on the "mechanism" of the action of Sal Hepatica salines. For example:

Sal Hepatica in laxative dilution was placed in one isolated canine ileal loop, a cathartic solution in another loop. After one hour in the peritoneal cavity, examination revealed that the laxative dilution of Sal Hepatica had gained 34% in volume, the cathartic dilution 204%.

Sal Hepatica aids in relief of certain types of gastric distress; it exerts helpful choleretic properties to promote the flow of bile. Sal Hepatica makes a bubbling, pleasant drink. Literature on request.

Graduate on left contains 5 cc. of Sal Hepatica solution as placed in ileal loop of dog. Graduate on right shows 6.7 cc. obtained after loop remained in peritoneal cavity for one hour. Inset depicts distended loops of dog's intestine filled with liquid bulk.

SAL HEPATICA



SUPPLIES LIQUID BULK TO FLUSH THE INTESTINAL TRACT

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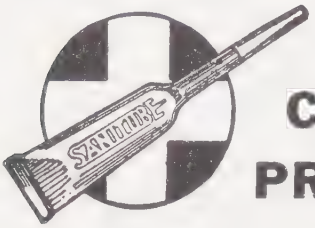

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A single tube only—half the ointment inside the urethra to prevent gonorrhea, half applied outside to protect against syphilis.

No "two tubes" to get confused, no color to stain fingers and clothing, no odor, no irritation.

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Sublingual Administration of Methyl Testosterone

C. A. Joël of Basle University, (*Jour. Clin. Endocrinol.*, February 1942), presents the clinical results obtained with sublingual administration of methyl testosterone. The methyl testosterone was administered in the form of tablets but very little was said about the nature of the tablets. They were described as being especially hard pressed, and each contained five mg. of the active substance. The tablets, the author stated, should be placed under the tongue and allowed to dissolve slowly with as little salivation as possible. The rapid and favorable effect of these tablets was explained as follows: Absorption from the oral mucous membrane made it possible to avoid the usual route through the liver, where the majority of substances underwent chemical changes and lost a large percentage of their activity; in addition, the short route from the oral mucous membrane to the main vessels and the heart also favored absorption. The taste of the tablets was pleasant so that this method of application was appreciated by the patient. The dosage given varied from one tablet of five mg. a day up to thirty mg. a day in severe cases. In six patients with insomnia and hot flushes, the administration of one tablet of five mg. every day for two months was sufficient. A report was made on nineteen cases (fifteen of climacteric disorders, two of dysmenorrhea and two of mastodynia). In one case in which nine hundred mg. of methyl testosterone was given in one month, a slight growth of hair was produced on the chin; the hair disappeared within a few days after discontinuing treatment.

New Sulfonamide Ointment

"Sulfaguen", a sulfonamide ointment containing four percent sulfanilamide and three percent sulfathiazole, has been marketed by the Fellows Medical Mfg. Co., Inc., of New York, for the treatment of certain pyogenic and other inflammatory conditions of either streptococcic or staphylococcic origin, such as impetigo contagiosa, acne vulgaris, infected eczema, and superficial skin infections.

The base of Sulfaguen is manufactured from free cholesterol, sterols and from higher alcohols of natural origin, processed in an inert hydrocarbon base. The ability of Sulfaguen to sustain large amounts of water renders it especially advantageous for use with sulfathiazole and sulfanilamide.

Vitamins alone are not enough!

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Contains VITAMINS: A-B_1-B_2(G)-C-D-E and other B Complex factors, fortified with MINERALS: calcium phosphorus, iron, iodine, manganese, magnesium, copper and zinc . . . separately balanced for each age group:

(1) ADULTS (2) INFANTS AND CHILDREN (3) ADOLESCENTS (4) EXPECTANT AND NURSING MOTHERS (5) SPECIAL GROUP (MIDDLE-AGED AND AGED PATIENTS.)

U. S. VITAMIN CORPORATION • NEW YORK, N. Y.

Truesdell Joins Staff of Effervescent Products

Effervescent Products, Inc., announce the affiliation with their company of William G. Truesdell as sales promotion manager.

Mr. Truesdell has just completed his assigned work as civilian consultant at the U.S. Army Medical Depot in St. Louis, organizing and operating the drug inspection service for supplying the Army at home and overseas.

His experience in the pharmaceutical field is of long standing. He entered the service of Parke Davis & Co. in 1922 as detail man, worked as field manager for many years and was transferred to Detroit as manager of their biological sales, hospital and animal industry divisions.

Mr. Truesdell's background also includes two years' teaching of materia medica at Cincinnati College of Pharmacy and hospital work in charge of pharmacy, as surgical assistant and anesthetist.

Dr. Floyd Boys Joins Searle Staff

Announcement is made of the affiliation with G. D. Searle & Co. of Dr. Floyd E. Boys, as assistant medical director.

Dr. Boys comes to Searle from the faculty of the University of Virginia, Charlottesville, where he has been in charge of surgical research for the last four years. He received his M.D. degree at Northwestern University, Chicago, and his Bachelor of Science degree at Harvard College. Following his graduation, he had five years of hospital practice in medicine and surgery, during which time he obtained a Master of Science degree at the University of Michigan.

Dr. Boys then went into active general practice for two years, before joining the medical faculty of the University of Virginia.

New President of The National Drug Company

Alfred B. Collins has been elected president of The National Drug Company, Philadelphia, manufacturers of biologicals, biochemicals and pharmaceuticals. Mr. Collins has been connected with the National Drug Company for eleven years and has held the posts of comptroller, general manager, and executive vice-president successively.

Charles E. Carr, former president and treasurer for many years, has been elected chairman of the Board and retains the position of treasurer.

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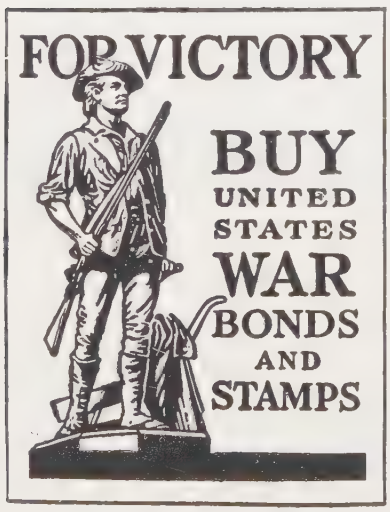

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Advertisements for this department, without display type, accepted at the rate of Two Dollars for fifty words or less. Additional words two cents each. Payable in advance. These prices cover the cost of remailing answers directed to this office. For current issue advertisement must reach us twenty-fifth of preceding month. We reserve right to refuse or modify copy.

TO THE BUSY DOCTOR

How long have you been postponing writing that original contribution? You can do it now, and save your time and effort by employing an expert literary assistant either to prepare the article or book for you under your supervision or relieve you of the irksome details of bibliographical work, translation, indexing, typing, and the complete technical preparation of your manuscript for the press. Rates reasonable. M. Webster Brown, Chappaqua, N. Y.

X Rays in Tuberculosis Control

The foundation of tuberculosis control is the finding of all cases of tuberculosis, says W. A. Doppler. An example has been set by the armed forces. Routine x ray examination of the chests of apparently healthy people for the purpose of finding the disease, is now the accepted practice at induction centers. Yet inducted men are only a few millions of the population. What about other millions of men, either too young or too old for service in the armed forces and the forty million women who are serving their country as workers or homemakers? A chest x ray should become an accepted practice in civilian life. Physicians should routinely x ray patients coming for general physical examinations; hospitals should x ray every patient seeking admittance; labor unions should x ray their membership; medical departments in industry, especially war industries, should x ray the chests of applicants for jobs. In fact, every person, young or old, should be x rayed.

Relocations of Physicians

Reports received by the War Manpower Commission's Procurement and Assignment Service for Physicians, Dentists, and Veterinarians show that approximately six hundred physicians have changed their places of residence and practice in the last few months. An effort is made by the Procurement and Assignment Service, to accomplish such relocations when the medical needs of the civilian population would be better served. Figures compiled by the Service come from forty of the forty-eight states. Of a total of 587 relocations in these forty states, 340 were directly due to action by the Procurement and Assignment Service. Five of the relocated physicians are women. A total of 214 of the 582 relocated male physicians are either over forty-five years of age, or, if younger, disqualified for military service. It is known that there have also been relocations in Kentucky, Delaware, Louisiana, Minnesota, Virginia, West Virginia, Oklahoma, and Vermont, but the figures have not been reported. In a number of States ingenious medical care plans have been worked out locally which enable fewer physicians to care for more civilians. Among such states are Maryland, California, Oregon, Michigan, and Arkansas.

The Procurement and Assignment Service has an organization in each of the nine Army corps areas, consisting, in each case, of a chairman, two physicians, two dentists, one veterinarian, one hospital representative, one medical education representative, and one public health representative. Also in each state there is a State chairman for medicine, for dentistry, and for veterinary medicine.

Emergency Medical Field Sets for United Seamen's Service

Douglas P. Falconer, national executive director of United Seamen's Service, has announced receipt from the Medical and Surgical Relief Committee of America, of sixty-four emergency medical field sets which are scheduled for distribution to overseas points where merchant seamen frequently require medical attention, and existing medical and hospitalization facilities are meager.

Each of the sets, according to Lieutenant Commander Daniel Blain, M.D., in charge of medical and health programs for War Shipping Administration-United Seamen's Service rest and recreation facilities, are valued at about $140 each. Among the eighty-four items included in each of the sets, are bandages, surgical dressings, instruments, unguents for burns, cold tablets, general medicines, and a varied supply of sulfa drugs, so important in the treatment of wounded seamen.

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Case Against Sal Hepatica Settled

Mr. Henry Bristol, president of Bristol-Myers Company, announced on May 12th that the four and a half year old case of the Federal Trade Commission against Sal Hepatica has been finally settled. The settlement, according to Mr. Bristol, does not interfere with the labelling of Sal Hepatica, nor question any basic claim made for the product in recent years. The case arose out of the construction to be placed on the language of an informal stipulation entered into between the Commission and Bristol-Myers in 1937. The Commission construed the stipulation one way, and the Bristol-Myers Company construed it in another. This conflict of view led to the issuance of a formal complaint by the Commission in the fall of 1938, and automatically brought into issue a large number of old claims that had been abandoned by the company many years ago, as medical opinions changed. When the case was tried, Bristol-Myers Company rested on the opinions of the Government's own experts without introducing testimony in its own behalf.

In his statement today, Mr. Bristol said that for the first thirty years of its life, Sal Hepatica was not generally advertised, but achieved its widespread popularity in large degree upon the recommendation of members of the medical profession. Its advertising program for Sal Hepatica, which began in 1926, was based upon what the profession said about the product. Since that time, he said, the Company had always followed the policy of attempting to keep pace with informed medical opinion.

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